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RICHARD P. ROTHWELL, C. E., M. E., ROSSITER W. RAYMOND, Ph. D., } Editors.

T. F. VAN WAGENEN, M. E., Denver, Colo., DON ANTONIO DEL CASTILLO, *Director of the School of Engineers*, City of Mexico, Mexico, } Staff Correspondents.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. Articles written by Mr. RAYMOND will be signed thus *

Business communications for the Western Department should be addressed to the Western Office at Denver, Colo.

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ANTHRACITE $2.35 PER TON IN NEW YORK HARBOR, AND THE "COMBINATION" BUG-A-BOO.

On Tuesday last, the 27th inst., the Delaware, Lackawanna & Western Railroad Company disposed of 100,000 tons of anthracite at public auction, and received for the same but $2.35 per ton f. o. b. in New York Harbor. This is the lowest average price ever reached in this market. Since these auction sales regulate the prices of by far the larger part of the anthracite mined, the figures obtained are of the greatest interest to stockholders in the great coal companies as well as to consumers of coal.

A few weeks ago it was reported in the regular stock reports in these pages that an expert accountant, after examination of the business of the Delaware, Lackawanna & Western, had declared that the receipt of an average price of $3.75 a ton for coal throughout the year would be necessary to enable the company to pay its "fixed charges." And this, be it remembered, when the costs of mining and transportation are lower than they have been for a great many years. A similar price would no doubt be required to pay the "fixed charges" of the Delaware & Hudson Canal Company, the "padding committee's" report to the contrary notwithstanding. As each of these companies produces about two million tons a year, the deficit at the prices obtained at this sale would be for the year some three million dollars; a figure which may not be very far from that actually attained. On the other hand, it is said that the Philadelphia & Reading Company, with its unprecedented business of over seven million tons, will show a profit of over four million dollars on the year's work; but even should the actual profits be considerably less than this sum, it seems that they will be more than sufficient to cover all "fixed charges."

There is no longer any question of the ability of this company to put its coal in market at a lower cost than can any of the Wyoming companies, and though probably all are losing money on the mining, there is a profit on the transportation when the quantity moved is great; to this is to be attributed, in great part at least, the difference in the financial results of the year's business of the different companies. Had the Reading's business been four instead of seven million tons, its balance sheet would have shown very different results from those it now reports. The utmost importance of increasing business, of stimulating the consumption of coal, must be apparent to every one familiar with the details of cost of producing and marketing it; nevertheless we hear constant and reiterated proposals for "combination" among the great companies, with the view of limiting production and increasing prices.

One would have supposed that the experience of four years of "combination" high prices and "combination" prosperity which left all the companies on the very verge of bankruptcy would have been better understood, or not so quickly forgotten, as these constant rumors seem to indicate has been the case. In the arguments given in favor of this nostrum one is forcibly reminded of the logic of the gambler who returns again and again to the gaming table, having thoroughly convinced himself that he now understands the game, and knows just where he made his mistake, and is satisfied that, if he had only played this or not played that, he would have been a winner instead of a loser. If he devoted but a very small part of the ingenuity thus wasted to the easy demonstration of the fact that the bank has *always* the chances in its favor, and must inevitably win in the long run, he would, probably, save his money for the prosecution of some business where his winning would be in harmony with, instead of opposed to well-known laws.

If the "Coal Kings" would devote the same amount of ingenuity to increasing their business in accordance with the fundamental principles of trade that they do to devising means for preventing their honorable associates from using loaded dice in the game they are playing, or if they exhibited the same degree of skill in their business that they show in manipulating the stock market or in floating loans, the coal business would not be in its present unsatisfactory condition, and the companies would not be approaching, as they now are, nearer and nearer to the brink of bankruptcy.

It is sometimes erroneously stated, in support of combination, by those whose business and duty it is to know the facts, that the English coal trade is now, and has been for the past thirty or fifty years, governed by such a combination, and it has even been proposed to send a special agent to investigate the subject. In reality there is no combination of the kind in England at the present time, nor has there been for more than thirty years. For the instruction of those whom it may concern, we may here repeat the record of one which existed in the infancy of the British coal trade, before the laws of trade and political economy had been so generally studied as they now are, and we call attention to the practical results which ensued from this system of conducting the business:

"In 1771, there was formed a combination among the coal owners who shipped their coal by the three rivers, the Tyne, the Wear, and the Tees, to raise the price of the coals to consumers, by restricting the quantity supplied. This combination, known as the 'limitation of the vend,' lasted, with but a few temporary interruptions, until 1845."

A select Parliamentary Committee on the state of the coal trade, reporting in 1830, says:

"When it is understood by the coal owners that all the parties interested in the coal trade on the Tyne and the Wear are willing to enter into an arrangement of this nature, a representative is named from each of the collieries; these representatives meet together, and from amongst them choose a committee of nine for the Tyne and seven for the Wear—which is, I think, the number of collieries on the Wear. This being done, the proprietors of the best coals are called upon to name the price at which they intend to sell their coals for the succeeding twelve months; according to this price the remaining proprietors fix their prices. This being accomplished, each colliery is requested to send in a statement of the different sorts of coal they raise, and the power of the colliery—that is, the quantity that each particular colliery could raise at full work; and upon these statements the committees, assuming an imaginary basis, fix the relative proportions as to quantity between all the collieries, which proportions are observed whatever quantity the markets may demand. The committees meet once a month, and, according to the probable demand of the ensuing month, they issue so much per 1,000 to the different collieries."

The "Report of the Commissioners appointed to inquire into the several matters relating to coal in the United Kingdom," published in 1871, states the matter a little differently, and says that this committee for the "limitation of the vend" assigned the quantity to be shipped each fortnight, and "the price at which coals of various qualities might be sold, when sea-borne for consumption within the Kingdom," and adds:

"Upon opening a colliery, the first thing to be determined was the 'basis,' or rank, which that colliery was to take. The coal trade committee appointed one referee, the coal owner another. These men, taking into account the extent of the coalfield secured, the size of the pits, the number of steam engines employed, and other matters which indicated the amount of capital employed, fixed the proportionate quantity which the colliery would be permitted to furnish towards the general supply."

"The restrictions enforced by the 'limitation of the vend' did not apply to coal shipped to foreign ports, consequently the coal owners endeavored to force a trade in that direction. The consequence of this was, that frequently coal was sold to foreign markets at 40 per cent. under the prices in the London market. To such an extent was this carried that English coal was sometimes to be purchased in St. Petersburg at half the price of the same coal in the river Thames."

This is what the Parliamentary Committee, in 1871, reports as to the practical working of this combination:

"*This system necessarily led to various schemes for securing the largest possible 'basis.' The proprietors burthened themselves in various ways, as by securing a royalty extending over from five to ten times the surface which they intended to work, as by sinking pits at great cost, which they had no idea of using, as by building twice the number of cottages which they required for the colliers, and by wasteful expenditure in every direction.*"

MR BUDDLE, a distinguished colliery manager, in 1829 was a zealous advocate of this combination, but the commission reporting in 1871 says: "All Mr. BUDDLE'S arguments were, however, answered by the fact that within a very short time the system of 'regulation' was abandoned."

It has not been re-established since 1845.

Like causes produce like results in trade as in physics, and a careful study of the past may prevent the recurrence of many disastrous experiments. The evils which oppress the coal trade are over-investment and debt, and these are ills which cannot be cured by anything except enormous increase of business. The object of every system of combination is to increase prices, and the inevitable end is to restrict consumption and increase cost of production.

No disguise can conceal these facts, and no system based upon them can result otherwise than disastrously to both the large producers and consumers.

PARAFF AND THE PHILOSOPHER'S STONE IN CHILI.

The folly of fools is beyond comprehension, and the credulity of avarice without limit. This may not be one of Solomon's proverbs, but it is for all practical purposes just as good as though it were. Witness the following paragraph concerning the wonderful doings of Mr. PARAFF in the transmutation of metals. Mr. P. must be a very clever conjurer, for he seems to have carried the Chilian capital by storm, and is certainly "making money," whether he is converting one metal into another or not. We are told that the people are so desirous of getting his precious stock that he cannot supply them as fast as they desire it. We hope it is scarcely necessary to tell the intelligent readers of the ENGINEER-

ING AND MINING JOURNAL that there is deception somewhere. At this distance we do not pretend to say where, and possibly the credulous investors may never find out where any more than they will find the whereabouts of their vanished pesetas; nevertheless the final result is as certain as when the alchemists of old deceived the fools, sometimes including themselves, of their day.

The following is clipped from the San Francisco *Bulletin:*

"A gentleman residing in this city, who is in close correspondence with relatives in Santiago, the capital of the Republic of Chili, states that Paraff has maintained himself, despite the opposition brought against him. He has now three establishments in operation, and is producing wonderful results. He has organized a company with a capital of $8,000,000, and the people are absolutely crazy to procure stock. Copper mines that were formerly comparatively valueless are now held at exorbitant figures, and prospecting is active in every direction. One of the instances of Paraff's assays is interesting. A ton of copper ore from the Caracoles District was submitted to several of the well-known assayers in the presence of a number of citizens, Paraff also being present. The assayers announced the result—they had obtained 4¼ per cent. of gold. Thereupon Paraff suggested that there must be more of the precious metal in the ore, but the assayers were prevented finding it on account of its being hidden by the copper. He produced the chemical powder, which he calls 'reactive,' and this was submitted to those present, and in its turn analyzed, without detecting the presence of gold. Scattering this over the pulverized mass, and allowing about half an hour for manipulation in order to produce thorough incorporation with it, he asked the metallurgists to reassay the ore, when the astonishing result of 37½ per cent. was reached. Paraff is reported to be on the top wave of success. He has purchased the Quinta, on the Canada, the principal street of Santiago, the former residence of the late Harry Meiggs, and which cost him $500,000, and there receives the worshipers of the golden calf in right royal style. Chili is beginning to believe in him as its financial savior, and his influence is only limited by the credulity of the people."

P.S.—Sooner than we expected when the above was "set up," comes the *denouement* as follows:

"Paraff, a gold swindler of Chili, and his accomplices are in prison, pending the result of the criminal suit which has been commenced in Valparaiso. It is said that a case of the copper from which Paraff used to pretend to extract gold by his process of beneficiation has been sent to the court by order of the Judge, who desires to satisfy himself as to the genuineness of the invention by seeing the author of it produce in his presence, and in the presence of others to be appointed for the purpose, the results which have so thoroughly tested the gullibility of the public."

COMSTOCK AFFAIRS.

Staff Correspondence of the Engineering and Mining Journal.

There has never been more prosperity going on at Washoe than at present. The great lode is being explored at both ends and all along the intervening ground, and what is called the east country rock is also being explored with many cross-cuts in the hopes of discovering another bonanza similar to that which is now pouring out its millions monthly from the Consolidated Virginia and California. It is now over thirty months since any new discovery of note has been made, if we except the opening of the Justice bonanza, and the continued successful prospecting on that of the Virginia and California. At present the south-end mines are the center of greatest expectation. For a long time this end of the great lode has been productive rather of assessments than of dividends, and in the opinion of the "insiders" it is about time for this thing to be ended.

Of all the mines of the coast, the Comstock, which stretches its imposing length along five good miles of the Washoe Range, is the first favorite.

The Sutro is still pushing its way ahead into the Washoe Range at the rate of fifty feet per month. California Street is rife with rumors regarding the probable course of the indomitable manager of the enterprise when he reaches his goal. There is talk of compromise, of bulkheads, of litigations; of almost everything which the ingenuity of newspapers and speculators can suggest. Mr. Sutro himself appears to have but one plan, and it is evidently the same which he has held in mind and spoken of always. He will proceed as if he owned the whole lead in front of him. When his objective point is reached, he will claim to have complied with the acts of Congress under which he is working, and demand the royalty which is therein specified. No doubt, men as shrewd as the bonanza kings and Mr. Sutro will find a basis of compromise mutually satisfactory, and avoid the legal war that must be highly injurious to both.

THE ARIZONA COPPER MINES.

Staff Correspondence of the Engineering and Mining Journal.

The Clifton and Santa Rita copper deposits in Southeastern Arizona have been known for a number of years, but it is only since the last three or four years that they have become prominent. The great extent of the Lake Superior deposits, and the remarkable production from the Calumet and Hecla mine in that locality, have rather overshadowed other districts, where production was still small, and of whose characteristics, on account of their remoteness, but little was known. While the Michigan mines, however, have (outside of the Calumet and Hecla) been slowly eating off their own heads under a falling market, several very fine copper districts have been opened in other parts of the country, the most notable being those in Vermont, Tennessee, North Carolina, and Alabama, in Montana, in Western Colorado, and in Arizona. Of these the latter is as yet by far the most productive and extensive, and at the same time is most advantageously located, as soon as railroads approach, for supplying, the various copper markets of the world. It will not be many years before a railroad will be pushed through Texas and New Mexico to Arizona from the gulch, which will bear the product of the mines to tidewater more quickly and cheaply than any other line.

The Arizona ores are so far almost wholly oxides (principally the red oxide), and occur in immense deposits as contact veins between quartzite and limestone, or in limestone. As taken from the mine they will average about 25 per cent. in metal. These deposits are from 10 to 50 feet in width of solid ore. The belt may be traced for miles across the mountains, but occurs in greatest strength on the hills known as the Yankee and Arizona Central.

The principal mines or claims are the Yankee, Longfellow, Arizona Central, Thompson, Gleason, and others; and of these the Longfellow, now operated by the Lerinsky Bros., and the Gleason are the most developed, the former being opened to a depth of 230 feet, and the latter 90 feet. In the deepest workings no change of the ore of any moment has occurred. Some copper glance has been found, and occasionally a bunch of pyrites, but in neither case to any extent.

The country in which the mines are located is at present so remote, and its internal resources so slightly known, that no complete smelting or refining of the ore is attempted; and what is done in this way is performed in the rudest description of furnaces.

COPPER SLABS FOR LINING FURNACES.

For many months great trouble was found in making a fire-brick which would stand the high heat necessary to melt the metal, but the desired end was accomplished finally by using the thin slabs of black copper produced in the first imperfect furnaces, to build the walls of the final successful ones. The expedient proved so satisfactory that the two parties now reducing (Lerinsky and Gleason) now build the hearths of their furnaces entirely of copper slabs, and find that these stand the heat and corrosion better than the best made fire-brick.

The ores are smelted to black copper with piñon charcoal, of which about 500 pounds are required for each ton of ore. This charcoal is manufactured about 90 miles from the mines, and is laid down at the furnaces at a cost of $30 per ton. As the ore is a remarkably pure one an excellent quality of crude copper is produced which contains about 90 per cent. of metal.

This product is then shipped overland to El Moro, in Colorado, by bull-teams, the distance being 750 miles. At El Moro the railroad is reached, and the metal then journeys on for 2,500 miles more to Baltimore, where it is refined. The expenses of the operation may be set down in round figures as follows:

Mining and reduction	8 cents per lb. of black metal.
Wagon freight	4 "
Railroad freight	1 "
Refining	2

One ton of black copper will therefore cost $300, and will yield 1,800 pounds of ingot metal, which, at present rates of 18 cents, are worth $324.

WHITE PINE, NEVADA.

Staff Correspondence of the Engineering and Mining Journal.

The recent discovery, or strike, in the Eberhardt & Aurora tunnel, which cuts under Treasure Hill, Nevada, has called attention in a marked manner to that once famous district. Our most recent information from White Pine indicates that the value of the strike (in dollars and cents) has been, as is usually the case, somewhat overestimated; that the tunnel has simply grazed on its side a mineralized mass of limestone and spar, of only ordinary grade; that as yet no huge deposit is in sight, and that still more development must be done before great results will appear. That this is the case is shown by the fact that the tunnel, after passing through twenty feet of ore, has again entered a hard limestone, and while the mineral deposit is to be prospected by drifts both ways, the header will be pushed onward.

It is, however, definitely settled that the mineral deposits on Treasure Hill extend downward at least 1,500 feet, and, if so far, they presumably are of indefinite depth. This assurance is of vast importance to White Pine District, and already its effects may be seen in the livelier aspect of affairs at Hamilton. There is now room for hope, and enterprises which have been languishing already show renewed vigor.

In 1867 the White Pine excitement began in the location of the Hidden Treasure mine on Treasure Hill, an isolated ridge rising to an altitude of 9,000 feet above the sea. The mines occur in a stratum of limestone, which crops out on the crest of the hill, and dips to the westward at an angle of about 25°. The first white man on the hill was led there by an Indian. For a time the discovery was kept secret, but finally it became known, and by the fall of the year there were a thousand miners on the hill, nearly all of whom were meeting with great success. The ore was found in irregular seams and chimneys in the limestone, and was of most extraordinary richness. In several of the mines, notably the Keystone, Aurora, and Eberhardt, masses of nearly pure chloride of silver were found, weighing hundreds and even thousands of pounds, and worth, as they stood in the mine, from $5 to $10 per pound. In fact so unusual was the richness of the ore that the rush for White Pine exceeded any in the annals of the Pacific coast, and the fame of the camp was world-wide. Ten thousand people were congregated on the summit of Treasure Hill, and in the little milling towns around its base, within fifteen months of the discovery of the first mine, and something over two millions in bullion had been produced at the various mills. An idea of the extent of the excitement may be gained from the fact that at the close of 1869 over 200 incorporated companies, mostly Californian, had been formed on the mines of Treasure Hill, with a nominal capital of $275,000,000 in coin. Two hundred stamps were by that time running day and night on the ore, and were handling probably 500 tons every 24 hours, corresponding to an annual bullion yield of nearly $5,000,000.

Of course, these times did not last long. By the close of the following year (1870), a change had come over the district. Its decadence was as sudden as was its rise. A majority of the extraordinarily rich surface pockets of chloride wer

exhausted, notably the Eberhardt, which, just as exhaustion was approaching, had been sold to an English company, who had stopped all work pending the construction of a sixty-stamp mill and a tramway. Of the other noted mines, the South Aurora and the Hidden Treasure were the only ones working to any extent. Chloride and Bromide Flats, which, the year before, were as alive with miners as an ant-hill with ants, held scarcely a score of workmen. Treasure City itself was one of the deadest towns in Nevada, and Hamilton was only a shade better off.

It was during the latter part of 1870 and during 1871 that English capital, which appears to be more easily attracted towards exhausted and badly worked mining properties than towards really good ones, came into White Pine. Nine mines in the district were sold in London, every one of which proved, as soon as the new owners took hold, to have been purchased at too high a figure. Nevertheless, a favorable reaction took place during the latter year. Considerable was spent by the foreign corporations on developing and building, and the bulk of the money thus thrown in circulation found its way into the ground again, resulting in the discovery by the prospectors of numerous small but rich chambers of ore, which, with but few exceptions, paid their owners fairly. By this time, also, the geology of the mountain had received some careful study; more correct notions regarding the ore formations prevailed, a certain amount of method and system began to be noticeable in the development of the properties still alive, and as a consequence encouraging results were not wanting, though few of the mines showed even traces of their former wealth. The most notable mines of the year were the Aurora North, Ward-Beecher, East Sheboygan, and Origina Hidden Treasure.

This brief revival lasted, however, only during the year. In 1872, the camp and district was dull, and growing no better. Hamilton contained scarcely a tenth of its former population, and Treasure City even less. And, though the bullion yield for the year was $800,000, there was no outlook for the future. Pioche was the great new camp of the year, and drew all who had big pay in their mines. The mainstay of the district was, during this time, the English company, who, though not working the old Eberhardt mine, had struck a large body of high grade ($100) ore in the Ward-Beecher, acquired by purchase, and were employing several hundred men in their mines and mill. As if to add to the misfortunes of an already rapidly decaying camp, in August the International mill of the English company, carrying sixty stamps, and, beyond question, one of the finest reduction works ever built on the coast, was burned to the ground.

At the end of the year, it was evident that nearly all the surface ore bodies had been exhausted. The mineral-bearing formation of Treasure Hill had by this time been traced in a continuous line upon the surface for 4,200 feet, and had been sunk upon in several claims to the depth of a little over 200 feet. A few tunnels had been begun to strike the strata of ore-bearing limestone at 500 feet and less in depth, and explorations with the diamond drill had been prosecuted to a depth of 800 feet. But nothing important had been found.

The year 1873 opened unauspiciously for White Pine. The Wheeler tunnel, which cut the ore formation 600 feet under the crest of Treasure Hill, had developed no body of paying ore, though the mineralized strata penetrated yielded a small assay in silver. The Original Hidden Treasure Company, regarding their mine as exhausted, had discharged nearly all their men. The Edgar location, perhaps the most regular producer on the hill, and which still carried in its stopes vast amounts of $50 ore, was closed during the summer indefinitely, because of the very small margin of profits. The Sheboygan was idle, and the Mammoth only prospecting. On the other hand, the Eberhardt mill (60 stamps) was replaced by one of 30 stamps, and in the last month of the year was started up with 2,500 tons of ore on hand. An entirely new ore body, carying by estimation over 12,000 tons of $50 ore, had been discovered at a depth of 250 feet in the North Aurora. During the year the bullion yield of the district slightly exceeded half a million dollars.

The winter marked the lowest ebb of the fortunes of White Pine since its discovery up to the present date. Not only were the times very hard and the outlook most discouraging, but the season was one of unusual severity, the heavy snows for a time preventing almost wholly all transportation between mines and mills. In the spring of 1874, however, a rapid revival began, and at the close of the year a production of $600,000 in bullion was scored for the district.

The Eberhardt and Aurora were now consolidated, and produced $432,000 worth of silver during the year. This property was still the mainstay of the district, and has remained so ever since. The combined mines belonging to the company embrace about 2,500 feet of the mineral crest, on which work has been pushed and ore extracted up to date to the amount of $3,750,000, the deepest workings being nearly 300 feet. During 1874 few other mines were worked. The great Treasure Hill tunnel was begun this year. It was started far enough down the side of the mountain to cut the mineral formation at a depth certainly of 1,800 feet, the company wisely concluding that if a test was to be made it would be as well to make it a final one. This tunnel has been pushed ahead continuously and vigorously from that date.

The last three years of the history of Treasure Hill mining have presented no features of great importance. Occasionally new bodies of ore have been found, and the annual bullion yield has ranged between five and six hundred thousand. On the Eberhardt & Aurora prospecting has been continuous, and the results moderately satisfactory. The entire camp has, however, been waiting for news from the tunnel, it being clearly evident that unless a continuation of the great ore channel found on the surface appeared below the future of White Pine was dark, and that operations must wholly cease in a few years. The recent strike is, therefore, of immense moment to the district. If drifts disclose ore in abundance, or even in moderate quantities, Hamilton will take a new lease of life and become something more than the shadow of its former self.

About $9,000,000 in silver bullion represents the production of the Treasure Hill mines since their discovery up to the close of 1876. It is difficult to believe that a formation which has produced so enormously from the very limited portion of it worked can be barren at every other point in its course.

THE LOWE GAS AND PROF. MORTON.

By Geo. S. Dwight.

A recent report upon the new gas at Harrisburg by Dr. Morton having been sharply commented upon by a part of the scientific press, some of the facts in the case may interest your readers.

While the practical operation of the gas at Harrisburg is so satisfactory that the demand for it by consumers has reached three times the holder capacity, the owners of the process insist that the plant in that place does not properly illustrate the system, because, contrary to their advice, it has no provision whatever for purification. However remarkable it may be that the gas can be sent out crude, they have always urged the employment of lime boxes.

The works at Manayunk, Philadelphia, which are much more extensive and perfect, have them, but not of a capacity adequate to the rapid evolution of the gas, which is a marked feature in the new system.

The most complete works at present are those at Lancaster, Pa., though the great plant in Baltimore will in a few days furnish the best possible opportunity for expert examination.

While it is not impossible that a knowledge of this serious deficiency in the Harrisburg works may have influenced their selection by interested parties, it is a matter of great surprise that Dr. Morton should have omitted to state a fact so largely affecting any analytical results as the absence of purification. It appears strange also that a physicist should step out of his department into another for the apparent purpose of aiming a partisan blow at what is generally believed to be a great improvement affecting a great popular want. The temerity of the experiment will presently be shown in the disclosure, by authorities eminent in practical chemistry, of serious fallacies in his methods and results.

If there are any doubts concerning the chemistry of his report, there can be none whatever as to its animus.

He says, "A quantity of the gas" (how much not stated) "was allowed to bubble through a solution of acetate of lead, producing a considerable precipitate of lead sulphide." Then in a later sentence, "The amount of sulphureted hydrogen in the gas examined was not determined, being only *a small fraction of a per cent.*," (not "considerable" enough after all to be included in his table); and then he proceeds with the statement "that the very marked properties of that gas (S H) render even this small amount very manifest and liable to cause serious inconvenience." If this is a fair statement to make regarding a crude gas containing, on his own admission, an insignificant quantity, what criticism would the learned doctor pronounce upon the purified coal gas of the city of Philadelphia, which by an analysis, curiously enough, printed in the very next column to his report, showed the heavy proportion of 1·03 of this same pernicious ingredient? In this connection it may be pertinent to inquire also, if the Philadelphia gas, with 5·20 per cent. of olefines, possesses a power of 17 75 candles (same paper), whether the Harrisburg gas, containing, as he shows, 14·12 of the same, should not be entitled to some passing mention at his hands, because of its high illuminating value?

One is forced to the conclusion that it was not the purpose of the report to comment upon any possible excellencies in the gas. Its main object was evidently to revive and emphasize the argument against the Lowe gas, because of its alleged excess of carbonic oxide, that constituent being regarded as poisonous if inhaled. The statement on this subject has the familiar stereotyped look which indicates an authorship outside of the Stevens Institute.

It has been abundantly shown that the danger of asphyxiation from the Lowe gas is no greater than from the use of common coal gas, and the average American citizen, knowing the risk in either case to be about the same, though in neither a great one, will be likely to take his chance on the gas which during his lifetime would furnish the most light for the least money. I am not disposed to undervalue any genuine sanitary question, but am clearly of opinion that in the present case this argument is not a strong one, but is raised to divert the attention of the people from the excellencies of a new method competent to furnish a very desirable competition in a prime necessity.

Leaving the final determination of the exact proportion of carbonic oxide to experts who have made and are still to make investigations at Harrisburg and elsewhere, I insist that the general assertion by Dr. Morton, that it "is a very objectionable constituent," lacks proof so far as illuminating gas is concerned.

On the contrary, it possesses some qualities in the matter of density and calorific intensity which render it desirable from the consumer's standpoint. The London gas carries 7·50 per cent., and yet the gas there has never been complained of on this account. It is not impossible, indeed, that the adverse opinions of local chemists were obtained years ago to protect the vested interests of the French companies against the innovations threatened by Gaillard, and have since been accepted and exaggerated without the due examination which the facts will shortly receive by competent experts. That there is no honesty in this objection on the part of the old companies is shown by the fact that, in Dr. Morton's own State, they have passed a general law making it a heavy penal offense for any *new* company to distribute gas containing over 10 per cent. of hydrogen, although the old companies are sending out 46 per cent. and over! It is very evident that this outcry against CO is simply because it stands for competition.

This particular ingredient having been intended as the central one for attack in his report, special attention is directed to the concluding sentence therein, which sounds a little like shutting the door on hope: "In reply to your question whether a 'water-gas' can be made which shall not contain an excessive amount of carbonic oxide, I reply that no practicable method is known." If he had added, "to me," it would have been a wise qualification, for the professor may presently be convinced that in this department of industry, as in many others, the busy workers and specialists find that the encyclopedias of yesterday are subject to revision by the science of to-day.

In conclusion, we regard the habit, into which some of our professional men have fallen, of delegating to attendants or subordinates the decisive manipulation connected with delicate determinations, as to be deprecated. We should be glad to trace some of the errors of the present report to this cause, and yet should still hold the signer to a full responsibility.

THE VALLEY OF THE COLORADO RIVER, AND ITS GEOLOGY.—XVIII.*

METHODS OF EROSION.

And yet the conditions necessary to great erosion in the Valley of the Colorado are not found to exceed those of many other regions. In fact the aridity of the climate is such that this may be considered a region of lesser rather than greater erosion. We may suppose that, had this country been favored with an amount of rainfall similar to that of the Appalachian County and many other districts on the surface of the earth, the base level of erosion of the entire area would have been the level of the sea; and, under such circumstances, though the erosion would have been much greater than we now find, the evidences of erosion would have been more or less obliterated. As it is, we are able to study erosion in this country, and find evidences of its progress and its great magnitude, from the very fact that the conditions of erosion have been imperfect.

It is proper to remark here that erosion does not increase in ratio to the increase of the precipitation of moisture, *cæteris paribus*, as might be supposed; for with the increase of rains there will be an increase of vegetation, which serves as a protection to the rocks and distributes erosion more evenly, and it may be that a greater increase of rains in this region would only produce a different series of topographic outlines, without greatly increasing the general degradation of the Valley of the Colorado.

From the considerations heretofore presented it is not thought necessary to refer the exhibition of erosion shown in the cañons and cliffs to a more vigorous action of aqueous dynamics than now exists, for, as I have stated, a greater precipitation of moisture would have resulted in a very different class of topographic features. Instead of cañons we should have had water gaps and ravines; instead of valleys with cliff-like walls, we should have had valleys bounded by hills and slopes; and if the conclusions to which we have arrived are true, the arid conditions now existing must have extended back for a period of time of sufficient length to produce the present cañons and cliffs. But there are facts which seem to warrant the conclusion that this condition has existed for a much longer period than that necessary for the production of the present features; that is, the characteristics of the present topography have existed for a long time. There are evidences that the lines of cliffs themselves have been carried back for great distances as cliffs by undermining, which is a process carried on only in an arid region.

The evidence is of this character. I have stated that the drainage of the inclined plateaus is usually from the brink of the cliffs backward, i.e., the water falling on the plateau does not find its way immediately over the cliffs, but runs from the very brink or edge of the plateau back toward the middle or farther side, which is usually found against the foot of another line of cliffs, and here the waters are turned toward some greater channel, which runs against the dip and cuts through the cliffs. Now, the waterways at the heads of those streams that have their sources near the brink of the cliffs would always be small, shallow, and ramifying into many minute branches if the line of cliffs were a fixed or immovable line; but we often find that the cliffs have been carried back by the undermining process until all these minute ramifications have been cut off; and we find cañons opening on the faces of the cliffs, the waters of which run backward, as above described.

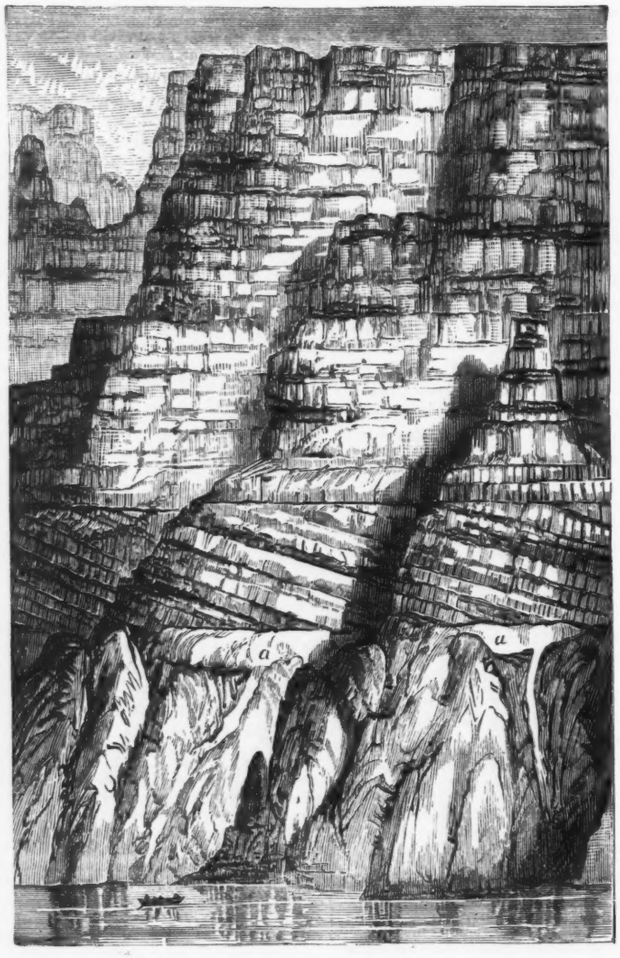

FIG. 39.—SECTION OF WALL IN THE GRAND CANON.

Let us suppose that we have a line of cliffs with an escarpment facing the south. The rain, falling on the escarpment and in the region south of the cliffs, would run toward the south or along the foot of the cliffs until it reached some more important water channel; the rain falling on the plateau from the brink of the cliffs backward would run toward the north, and the waters falling off this upper region would excavate channels for themselves, and, under proper conditions, canons would be cut. As the cliffs are undermined and this line carried back into the plateau, the area with a southern drainage would be increased, the area with a northern drainage correspondingly diminished, and, when the process had continued for a sufficient length of time, we would find the southern edge of the plateau carried away by this undermining process until all the heads of the streams were cut off, and until the line had reached the cañons.

Gradually during the progress of erosion the excavation of the bottom of the cañons would cease, as the supply of water running through them would be cut off, and such cañons would have to be considered as comparatively ancient. Such facts are frequently observed in this cañon and cliff country.

From such considerations it seems that we may safely conclude that the cliff topography has prevailed in that region for a long time. There are evidences also that there were cañons here before the present cañons were carved.

* Extracts from Report of Major J. W. Powell on *The Exploration of the Colorado River of the West*. Washington, 1875.

Mr. G. K. Gilbert, a geologist of Lieut. Wheeler's corps, in a paper communicated to the Philosophical Society of Washington, in 1873, deduced a similar conclusion from an independent series of facts observed in Western Utah. The basin of the Great Salt Lake, a portion of which Fremont designated the "Great Basin," has now so dry a climate that its waters gather in its lowest parts and evaporate, and have no outlet to the sea. In a former period, however, there was more rain, the valley was filled with water to its brim, and in place of the Salt Lake Desert there was a broad and deep fresh lake discharging its surplus into the Columbia River. The epoch of this lake Mr. Gilbert finds reason to consider identical with the Glacial Epoch, and it was of limited duration. Among its vestiges are deposits of fossiliferous marl, which are conspicuously contrasted with the gravels and sand that now slowly accumulate in the same region, borne by intermittent streams that descend from the mountains. Where the beds are superposed, the marls testify to a moist climate, and the gravels to a climate so dry that the basin was never filled with water. But above the marls are found only scattered and thin deposits of gravel, while below them the gravel beds are omnipresent and of great depth, and hence it was reasoned that the arid period that preceded the Glacial Epoch was many times longer than that which has followed it.

Even during the Glacial Epoch Mr. Gilbert considers that "the Atlantic Slope and the region of the Great Basin were contrasted in climate just as now. The general causes that covered the humid east with a mantle of ice sufficed in the arid west only to flood the valleys with fresh water, and send a few ice streams down the highest mountain gorges."*

RECORDS OF MORE ANCIENT LANDS.

The summit of the Kaibab Plateau is more than six thousand feet above the river, and I have already mentioned that the summit of the plateau is also the summit of rocks of Carboniferous Age. These beds are about three thousand five hundred feet in thickness, and beneath them we have a thousand feet of conformable rocks of undetermined age. This gives us 4,500 feet from the summit of the plateau down to the non-conformable beds. Still beneath these we have 1,500 feet, so that we have more than 1,500 feet of rocks exposed in the depths of the Grand Cañon. Standing on some rock which has fallen from the wall into the river—a rock so large that its top lies above the water—and looking overhead we see a thousand feet of crystalline schists, with dikes of greenstone and dikes and beds of granite. Heretofore we have given the general name granite to this group of rocks; still above them we can see beds of hard, vitreous sandstone of many colors, but chiefly dark red. This group of rocks adds but little more than five hundred feet to the height of the walls, and yet the beds are 10,000 feet in thickness. How can this be? The beds themselves are non-conformable with the overlying carboniferous rocks; that is, the carboniferous rocks are spread over their upturned edges.

In illustration 39 we have a section of the rocks of the Grand Cañon, A A represents the granite, *a a* dikes and eruptive beds, B B these non-conformable rocks. It will be seen that the beds incline to the right. The horizontal beds above C C are rocks of Carboniferous Age, with underlying conformable beds. The distance along the wall marked by the line *x y* is the only part of its height represented by these rocks, but the beds are inclined, and their thickness must be measured by determining the thickness of each bed. This is done by measuring the several beds along lines normal to the planes of stratification, and in this manner we find them to be 10,000 feet in thickness.

Doubtless at some time before the carboniferous rocks, C C, were formed, the beds, B B, extended off to the left, but between the periods of deposition of the two series, B B, and C C, there was a period of erosion, the beds themselves are records of the invasion of the sea; the line of separation, the record of a long time when the region was dry land. The events in the history of this intervening time, the period of dry land, one might suppose were all lost. What plants lived there we cannot learn; what animals roamed over the hills we know not; and yet there is a history which is not lost, for we find that after these beds were formed as sediments beneath the sea, and still after they had been folded, and the sea had left them, and the rains had fallen on the country long enough to carry out 10,000 feet of rocks, the extension of these beds to the south, which were cut away, and yet before the overlying carboniferous rocks were formed as sediments of sand and triturated coral reefs, and ground shells and pulverized bones, some interesting events occurred, the records of which are well preserved. This region of country was fissured, and the rock displaced so as to form faults, and through the fissures floods of lava were

* *Bulletin Philosophical Society* Washington, 46th meeting, April 26, 1873.

poured, which, on cooling, formed beds of trap or greenstone. This greenstone was doubtless poured out on the dry land, for it bears evidence of being eroded by rains and streams prior to the deposition of the overlying rocks.

Let us go down again and examine the junction between these red rocks, with their intrusive dikes and overlying beds of greenstone and the crystalline schists.

Dame Nature kneaded this batch of dough very thoroughly. After these beds were deposited, after they were folded, and still after they were deeply eroded, they were fractured, and through the fissures came floods of molten granite, which now stands in dikes or lies in beds, and the metamorphosed sandstones and shales and the beds of granite present evidences of erosion subsequent to the periods just mentioned, yet antecedent to the deposition of the non-conformable sandstones.

Here, then, we have evidences of another and more ancient period of erosion, or dry land. Three times has this great region been left high and dry by the ever-shifting sea; three times have the rocks been fractured and faulted; three times have floods of lava been poured up through the crevices; and three times have the clouds gathered over the rocks, and carved out valleys with their storms. The first time was after the deposition of the schists; the second was after the deposition of the red sandstones; the third time is the present time. The plateaus and mountains of the first and second periods have been destroyed or buried; their eventful history is lost; the rivers that ran into the sea are dead, and their waters are now rolling as tides, or coursing in other channels. Were there cañons then? I think not. The conditions necessary to the formation of cañons are exceptional in the world's history.

We have looked back unnumbered centuries into the past, and seen the time when the schists in the depths of the Grand Cañon were first formed as sedimentary beds beneath the sea; we have seen this long period followed by another of dry land, so long that even hundreds or, perhaps, thousands of feet of beds were washed away by the rains; and, in turn, followed by another period of ocean triumph; so long that at least ten thousand feet of sandstones were accumulated as sediments, when the sea yielded dominion to the powers of the air, and the region was again dry land. But aerial forces carried away the ten thousand feet of rock, by a process slow yet unrelenting, until the sea again rolled over the land, and more than ten thousand feet of rocky beds were built over the bottom of the sea; and then again the restless sea retired, and the golden, purple, and black hosts of heaven made missiles of their own misty bodies—balls of hail, flakes of snow, and drops of rain—and when the storm of war came, the new rocks fled to the sea. Now we have cañon gorges and deeply eroded valleys, and still the hills are disappearing, the mountains themselves are wasting away, the plateaus are dissolving, and the geologist, in the light of the past history of the earth, makes prophecy of a time when this desolate land of Titanic rocks shall become a valley of many valleys; and yet again the sea will invade the land, and the coral animals build their reefs in the infinitesimal laboratories of life, and lowly beings shall weave nacer-lined shrouds for themselves, and the shrouds shall remain intombed in the bottom of the sea; when the people shall be changed, by the chemistry of life, into new forms; monsters of the deep shall live and die, and their bones be buried in the coral sands. Then other mountains and other hills shall be washed into the Colorado Sea, and coral reefs, and shales, and bones, and disintegrated mountains shall be made into beds of rock for a new land, where new rivers shall flow.

Thus ever the land and sea are changing. Old lands are buried, and new lands are born; and, with advancing periods, new complexities of rock are found, new complexities of life evolved.

NOTES ON THE IRON ORE AND ANTHRACITE COAL OF RHODE ISLAND AND MASSACHUSETTS.*

By A. L. Holley, of New York City.

The existence of iron ore and anthracite coal in the neighborhood of Providence, R. I., has long been known, chiefly as a geological fact; that these materials, so near to each other and to tidewater, are of such a good quality, and are present in such large quantity, as to have seriously raised the question of establishing blast-furnaces there, was a surprising fact to me; and I have thought that the few notes I have lately gathered on the subject would be of interest at this partly New England meeting.

The coal field referred to has an area of above 400 square miles, and is found throughout the belt of transition rocks extending from Newport Neck to Mansfield, Mass. It underlies the cities of Providence and Newport, and the towns of Middletown, Portsmouth, Jamestown, Warwick, Barrington, Cranston, North Providence, Cumberland, Bristol, Warren, and East Providence in Rhode Island, and Seekonk, Attleboro, Wrentham, and Mansfield in Massachusetts. The amount of coal is not estimated, but very roughly stated at "hundreds of millions of tons" in a report of "the Rhode Island Society for the Encouragement of Domestic Industry." Professor Ridgway, in a memorial to the General Assembly in 1868, states that the field is a large but shallow one, made up of a cluster of beautiful coal basins, being identical with the lower coal series of the anthracite basin of Pennsylvania." The coal on the edges of the field has been not only broken up, but altered, by heat and pressure, such as the Pennsylvania field seems to have escaped; but Professor Ridgway states that it is regular and undisturbed, and less altered, in other parts. Still later—in 1875—a hole was sunk a little over 700 feet, at a point in Massachusetts some five miles from Providence, in the center of the basin, and a bed of coal nine feet thick was found at this depth. Its quality, judging from the core brought up, was superior to the coal previously worked. All this coal has a red ash, and burns with great freedom and with a fuller blaze than other anthracite. The ash is quite fusible, so that a moderate blast is required. Some time ago, Mr. Samuel L. Crocker, of the Taunton Copper Company, stated that, for about twelve years, he had used 10,000 tons annually of this coal from the Portsmouth mine, in various manufacturing establishments and for domestic purposes, and that, for steam and all ordinary purposes, it was quite as good as Pennsylvania anthracite; while, for smelting copper ores, it was the best mineral fuel. More recently, the Taunton Copper Company have acquired this mine, and are now raising their own coal. The main shaft measures 1,400 feet on the incline, and the gangways aggregate a length of 3½ miles. Another mine at Cranston, from which some thousands of tons were formerly shipped, has recently been reopened with a capacity of 100 tons per day. Most of the workings have been on the outcrop, where, as before stated, the coal is broken and altered. But the alteration seems to have pretty well freed the coal from sulphur, and has also given it free-burning qualities.

Professor Jackson's analysis of the Portsmouth coal is as follows:

Water and volatile matter	10·00
Carbon	84·50
Ashes of dark red color	5·50

Prof. Shaler's analysis of Cranston coal (1876) is as follows:

Volatile matter expelled at red heat	3·55	Sulphur	0·026
Freed carbon	82·25	Specific gravity	1·839
Ash	5·85	Hygroscopic moisture	8·55

The magnetic iron ore deposit at Cumberland, three miles from Woonsocket, and twelve from Providence, is the most valuable in the State. The "Cumberland Iron Hill" is a mass of ore 500 feet long, 150 feet wide, and 104 feet high, and is estimated to contain over a million tons above natural drainage. Probably a very much larger quantity lies below ground. The ore is not rich in iron—it averages 35 per cent.—but it is extremely free from sulphur and phosphorus, the latter element, as lately determined at the Bethlehem iron works, being but 0·026 per cent. The Bethlehem analysis gives the iron in one specimen as 38 86 per cent., and in another as 33 per cent., and the silica as 25·5 per cent.

Dr. Chilton's analysis is as follows:

Per- and protoxide of iron	58·50	Magnesia	6·80
Oxide of manganese	2·10	Lime	0·65
Oxide of titanium	3·66	Water and loss	1·96
Alumina and silica	26·33	Metallic iron	42·58

Such an ore mined by open quarrying with natural drainage, and almost on tidewater, should seem to be of some value for the steel manufacture.

There are also hematite deposits, the largest being at Cranston, five miles from Providence.

The analysis of this ore by Prof. Willis in 1870 is as follows:

Volatile matter	14·95	Phosphoric acid, 0·453 phosphorus	0·182
Peroxide of iron	76·285	Proxtoxide of manganese	0·08
Protoxde of iron	Trace	Lime	0·50
Silica	4·84	Magnesia	0·41
Alumina	2·10	Loss	0·20
Sulphuric acid, 0·118 sulphur	0·039		99·936
Metallic iron	53·40	Metallic iron in calcined ore	63·60

The manufacture of iron in Rhode Island is not exactly a new subject, since it commenced in 1703. Many cannon were cast here from these ores for use in the Revolutionary war and in the war of 1812. The charcoal iron manufacture closed in this State in 1834, when anthracite iron began to be introduced. The authorities of the time pronounced the iron of very superior quality. The Cumberland and Cranston ores were mixed in equal quantities.

It has been estimated that pig iron can be produced in this region at less than $16 per ton, which is no doubt true, seeing that ore, coal, and limestone are adjacent and easily mined, provided the coal turns out to be a good blast furnace fuel. I do not learn that experiments have been made in this direction. But whether iron is produced here or not there is already a largely growing development of coal mining, and it seems probable that ore of this quality, so near tidewater, may find a profitable market.

ANALYSIS OF SOME TELLURIUM MINERALS.*

By E. P. Jennings, Ithaca, N. Y.

The abundance and value of the tellurium minerals of Colorado is well known, but, as yet, few analyses have been made of them, and I offer these as a small contribution to the chemistry of these valuable ores.

1. *Native Tellurium.*—The specimens from which the analyses of this mineral were made are from the "John Jay" Mine, Boulder County, Colorado, where it occurs in quite large masses, though mixed with more or less silica and iron pyrites. It is usually a fine-grained, tin white mineral, but sometimes occurs in distorted, hexagonal prisms in cavities in the quartz. Before the blowpipe it gives the reactions for tellurium, sulphur, and iron; by cupellation, yields a small amount of gold. An analysis of a coarsely crystallized specimen gave the following results:

Specific gravity, 5·105.

Tellurium	58·40	Silica and insoluable	11·34
Gold	1·36	Silver, lead, and mercury	Trace.
Iron pyrites	24·92		100·59
Ferric oxide	4·37		

Deducting the pyrites, iron oxide, and silica, we have for the composition of the mineral:

Tellurium	98·30
Gold	2·29
	100·59

Or, considering the gold to be in combination with tellurium to form sylvanite, we have:

Native tellurium	96·07
Sylvanite ($Au_2 Te_3$)	4·52
	100·59

An analysis of another specimen from the same mine, and of but slightly different appearance, gave the following results, which, it will be seen, differ considerably from the first:

The specific gravity of the mineral is 6·346.

Tellurium	71·36	Ferric oxide	1·53
Gold	7·36	Iron pyrites	·88
Lead	4·81		99·80
Silica and silicates	13·86		

Deducting the silica, pyrites, and oxide of iron, we have for the composition of the mineral:

Tellurium	85·253	Lead	5·746
Gold	8·792		99·791

Assuming the mineral to be a mixture of native tellurium, sylvanite and altaite, we will have:

Native tellurium	73·234
Sylvanite (Au_2Te_3)	17·259
Altaite (PbTe)	9·298
	99·791

This analysis was made last spring, and sent to the *American Chemist* for publication, and is only introduced here to show the great variation in the ore, even from the same mine.

* Read before the American Institute of Mining Engineers at the Amenia meeting, October, 1877.

* A paper read before the American Institute of Mining Engineers, at the Amenia meeting, October, 1877.

2. *Sylvanite.*—I have analyzed only a single specimen of this mineral, obtained from the Smuggler mine, Colorado. In appearance it resembles somewhat the native tellurium from the John Jay mine, but is more of a lead-gray color, and is not so fine-grained. Specific gravity, 3·565. Before the blow-pipe it gives the reactions for tellurium and gold, the gold being light-colored from the large amount of silver it contains. An analysis gave the following results :

Tellurium	28·16	Ferric oxide and alumina	1·36
Gold	10·04	Cobalt and lead	traces
Silver	4·03		
Zinc	·31		99·59
Silica and silicates	55·79		

Deducting the silica, oxide of iron, and alumina, and assuming the small amount of zinc to be combined with tellurium, we have

Tellurium	65·84	Zinc	·72
Gold	23·56		
Silver	9·45		99·57

—which agrees closely with the formula of sylvanite $(Au, Ag)_2Te_3$.

THE NEW IRON DISTRICT OF OHIO.

[By Arthur P. Wendt, E. M.

This district seems at present to be entering a cloud. In the November number of the *Metallurgical Review*, Mr. Ed. C. Pechin remarks that the Shawnee or Iron Point vein, which heretofore was considered the principal resource of the region, has been found very irregular, having almost entirely disappeared in the drifts at the XX. furnace, and given way to a seam of coal on a portion of the Iron Point Property. The writer of this can substantiate Mr. Pechin's views. On a property adjoining Iron Point, a large number of test-pits were sunk, but only a single shaft showed the Shawnee vein of such quality and quantity as to warrant the base of extended operations thereon. In many shafts a ferruginous sandstone was discovered in place of the ore; in others (where the vein had little cover) a silicious hematite was its representative. The main supply of ore for the region will, it seems, have to be looked for hereafter in the "Baird" or limestone vein found below the "big" bed of coal. Prof. Orton, President of the Ohio Agricultural College, and attached to the Ohio Geological Survey, expresses his conviction that this "Baird" seam is identical with "the limestone ore" of Hanging Rock, he having traced it continuously from one district to another. Hence, it is of the greatest importance for the future of the district to determine whether this ore can be worked under heavy cover, and to prove that it is not there altered into ferruginous limestone too poor in iron to pay for working. In this connection the necessity of completing the partially finished Geological Survey of the region cannot be too strongly urged on the Ohio Legislature.

Two of the Shawnee furnaces, the XX. and Gore, have been blown out, or rather burnt out. the former after not quite a year's run. If blasts of so short duration are to be the rule, the estimated cost of $12 a ton will not pass beyond the status of a paper estimate, and the "large profits" will vanish rapidly before the eyes of sanguine stockholders. With but two or three exceptions, all the furnaces built so far will be short of water every summer, and every one knows that it is an easy matter to increase the cost of iron from $1.50 to $2 per ton by dearth of tuyere water, and consequently frequent stoppages and repairs.

There can be no doubt but that Shawnee and vicinity offer many inducements to the iron master, but it is not by any means the iron master's Elysium painted by wild speculators. Careful surveys of properties offered for sale, aided by the skill of the chemist and metallurgist, will be necessary to decide on the locations of projected furnaces, if the investments are to bring profit and not loss.

ON "BUCKSHOT" IRON.*

By F. P. Dewey, of Dover, N. J.

At the Wilkes-Barre meeting of the Institute, Dr. J. Lawrence Smith, in the course of his remarks on some peculiarities in the composition of irons, alluded to the so-called "buckshot" iron, and exhibited a specimen of this material. He said that when the small granules, or shot, were separated from the mass, they could be flattened under the hammer, and inferred that these particles had been decarburized by the blast before sinking into the hearth of the furnace, and thus we had the exceptional production of wrought iron in the blast-furnace.

I have recently obtained a characteristic specimen of this variety of iron from one of the furnaces at Orbisonia, Pa. Considerable uncertainty existed as to its true nature and the conditions of its production. Its weight seemed to preclude the idea that it contained much or any slag, yet its lack of strength indicated that it was not homogeneous cast iron. At times considerable quantities had been produced, which could only be utilized by charging in the furnace and remelting. The specimen, on the freshly fractured surface, appeared to consist of flattened globules of iron cemented together by a bluish material which one would naturally suppose to be slag, and a qualitative examination for lime strengthened this supposition.

It was quite difficult to obtain drillings, as there was a tendency to split in several directions as soon as pressure was applied; but enough were obtained to undertake quantitative determinations. They were found to consist of two portions—one attracted by the magnet, and the other not. By repeated separations the magnetic portion was found to be 94·44 per cent., and the non-magnetic 5.56 per cent.

Analyses of these gave the following results :

Magnetic Portion.	Per cent.
Graphite	3·43
Combined carbon	0·26
Silicon	2·79
Phosphorus	0·412
Sulphur	0·292
Copper	0·11
Manganese	0·50
Iron (by dif.)	92·206
	100·000

Non-magnetic Portion.	Per cent.	
Lime	71·41	O=24·028
Magnesia	Trace.	
Protox of iron	Trace.	
Sulphide of calcium	3·87 S=1·72,	O= 3·44
		27·468
Silica	24·62	O=13·131
	99·90	

Considering the sulphur to replace oxygen in the lime of the silicate, the oxygen ratio of the base to the acid is 2·09 : 1 or 2 : 1; whence the formula $(R''O)_4SiO_2$. The ratio between the oxygen of the lime and the oxygen equivalent of the sulphur in the sulphide is 7·09 : 1 or 7 : 1; hence the full formula should be $(CaO_{7/8}+CaS_{1/8})_4SiO_2$.

A large number of separate globules were treated with hydrochloric acid, but none failed to leave a carbonaceous residue. From these experiments the specimen examined is shown to be a mixture of ordinary carburized iron, and a highly basic subsilicate of lime, and its production is doubtless caused by an excess of lime in the charge, a thick and semi-fluid slag being thereby formed which does not allow the perfect separation of the iron. While it is not impossible that the iron in the product of such an abnormal furnace process may sometimes be partially decarburized, it is not necessary to assume this decarburization to explain the formation of this product.

For the determination of the total carbon, A. S. McCreath's method of decomposing the pig iron with cuprio-ammonic chloride and combustion of the residue in chromic acid* was used, and for the graphite Dr. Drown's method of boiling for half an hour in hydrochloric acid,† and combustion of the residue as before in chromic acid. The sulphur was determined by Dr. Drown's method of using potassio-permanganate to absorb the hydric sulphide‡ evolved by the action of hydrochloric acid.

LECTURES ON MINING.—No. LVIII.

By Prof. W. W. Smyth, M. A., F. R. S., Royal School of Mines, London.

STAMPS.

When we come to the picked varieties of ore which contain the valuable substance disseminated through a large quantity of stone, commonly associated with quartz or other non-metallic matter—the last group into which we consider we might divide the ore advantageously—we shall arrive at a class of substance which can no longer be comminuted by the ordinary crusher. There is only one instance in the whole of the tin mining districts of the West of England in which the crushing rolls can be applied to the purpose of tin dressing, and that on account of the peculiar character of the ore, which, generally speaking, was of large and coarse crystals—the mine of Drakewalls. In this case, however, it has disappeared within the last few years, and now all tin mines, the great majority of gold, copper, and lead mines, which have the substances disseminated through large quantities of material, have come back to the same apparatus—apparatus in which you do not depend upon a smooth and unworn surface, and in which large quantities of the material can be pulverized at a small expense, in all of which respects no apparatus has yet answered the purpose like the stamps, or stamp-mills. These stamps will form the subject of the present lecture, though to go into the matter fully would require a series of lectures. As seen in its simplest form, you have in the stamps a strong, usually wooden, frame placed on an extremely firm foundation, within which three or four of these stamps-heads work, being raised from time to time by means of what we call lifters. The stamp consists of a head of cast iron, rarely steel, weighing from one cwt. to upwards of 1,000 lb., and the lifter, or shank of wood or iron, from 9 to 12 feet long, and strong enough to support the weight of the stamps-head. The stamps will be raised and allowed to fall through a height of from 8 inches to 1 foot, and the power—which may consist of a water-wheel, steam-engine, etc.—will give rotatory movement to a horizontal axis, or barrel, of cast iron, on which is a series of cams, arranged in a certain order so as to raise the lifters, and with them the stamps-heads, by engaging with a tongue or projecting tappet on the lifter; always taking care to have a full weight on the axis, and yet not to overpower it. As regards the scale of this apparatus, you may not unfrequently see, in some of the remote valleys of Cornwall, a water-wheel 12 feet to 20 feet high, working three stamps-heads; on the other hand, you may often find 16 to 30 heads working, in some cases 60 to 80; while in some of the largest mines—Dolcoath, Carn Brea, Phœnix, etc.—100 to 150 stamps-heads are in use. These latter are paralleled, if not exceeded, in the districts of Schemnitz and Kremnitz, and again as to weight, if not number, in the Australian, Californian, and Colorado districts.

We must now look at each of the parts of the apparatus separately, and will take first the *lifter*. In the earlier forms rectangular logs of wood, 4 inches by 5 inches, or 5 inches by 6 inches, and 9 feet to 12 feet long, were employed; but, with increasing scarcity of wood and increased cheapness of iron, it has come to pass, in course of the last thirty or forty years, that the wooden lifters have been replaced to a great extent by wrought iron. The bars used in this country are, as a rule, rectangular in section, sometimes square; in colonial districts, cylindrical. An arrangement of this kind wants to be put into a very strong *frame*, which consists of a couple of uprights, or a series in case of a large number of stamps, connected by cross-pieces which keep the lifters in place, and which, for convenience, should be so arranged as readily to be taken off, that the stamps may be repaired when necessary. It will be seen that the nature of the lifting movement will cause the lifter to rub against these cross-pieces as it is raised by the cam, and various methods have been proposed to lessen the friction and the wear. In some cases a small loose piece of wood is put between the cross-piece and lifter, and kept well greased; but the usual method is to have grooves in the cross-pieces, lined with hard wood, and triangular pieces of cast iron screwed to the lifter, to move in the grooves. Where there are a great number of stamps-heads, they are divided by the uprights into sets, or batteries, each containing three or five heads, and working in a separate box, or "cofer," below. In such a case the moving power may be placed at one end of the series, or, as is often done, the engine is placed in the center, and works an axle on each side. We come next to the *head*, and the weight of this will have to be proportioned very much to the nature of the material to be stamped. The weight must be greater for tough ore than for hard, brittle quartzose rock. In the old copper mines the halvans used to be stamped with heads of not more than 3 cwt., the material being got rid of very rapidly.

A series of experiments were carried out, many years ago, in the mines at Schemnitz, which showed that it was desirable to employ heavier stamps-heads than those in use, and thus heads of 6 to 8 cwt. came to be employed; and all subsequent experience has confirmed the correctness of this result. The stamps-head is in the form of a parallelopiped of iron, with a more or less curved top, with a hole for the purpose of receiving the shank of the lifter, which is then wedged in, and a couple of iron bands shrunk on. Sometimes, however, the lifter is suspended, with its end in the mold, at the time of casting the head, so as to embed it in the casting. In the mines of California and Australia, a cylindrical form of stamp has been preferred, working on a cylindrical anvil of about the same size. The stamps-heads, even when made of the hardest cast iron, are found to wear away so rapidly as to produce two great drawbacks : In the first

* A paper read before the American Institute of Mining Engineers at the Amenia meeting, October, 1877.

* ENGINEERING AND MINING JOURNAL, vol. xxiii., p. 169.
† *Transactions of the American Institute of Mining Engineers*, vol. iii., p. 41.
‡ *Ibid.*, vol. ii., p. 224.

place, the stamp loses so much of its weight that it no longer does its work with full efficiency; and secondly, a large proportion of cast iron is so mingled with the substance you have afterwards to dress as to give rise to a great deal of difficulty to get rid of it again. To avoid this many different plans have been proposed. Chilled iron is sometimes suggested, but generally it is not adopted, because, although it gives you a shell of hard metal, yet the hardening is so irregular throughout the mass as to render it less snitable. Steel has been employed in some cases, but not with such success as to make it largely imitated. In the Californian mines they have adopted what appears to be a very good plan —that of a shoe fixed on to the bottom of the regular head, which can be renewed from time to time, and thus the head itself is not allowed to become worn. The upper part of the shoe has a conical process which fits into a corresponding hollow in the under surface of the head, and is fixed by means of an iron band shrunk on hot at the junction. The castings for these heads are from 12 to 18 or 24 inches in length, weight from 2 to 8 cwt.; a large weight being added in the shape of the strong wrought iron lifter.

The next point to be looked to is the contrivance for raising the weight. In the ordinary wooden lifter it was simply accomplished by having a slot 10 or 12 inches long in the lifter, into which a tongue was wedged. Of course, as the stamps-head wears away it falls lower and lower, so that the tongue falls out of place in time unless some means are adopted for regulating it. In this case the tongue is simply raised up in the slot, and the space beneath it is wedged up; this method, however, takes up considerable time. It is necessary that each of these sets should be cast separately, in order that one may at any time be detached for repairs without interfering with the rest of the stamps. One or two examples may be seen where, for obviating the friction due to the rubbing of the cams on the tongues, small rollers have been placed on either cam or tongue; but all such arrangements have failed, owing to the great strength required in dealing with such heavy weights. Another way of accomplishing this seems to have been successfully employed in Australia, where not only is the lifter a round iron bar with a cylindrical head, as mentioned above, but the tappet is also a boss of iron of a cylindrical character fixed on to the lifter by means of wedges. The tappet on the barrel is made, in this instance, much like the tooth of a cog-wheel, and is so placed as to lift the lid into a new position each time, by which means, it is said, you not only get a greater regularity of wear, but also a greater amount of work. The construction of the "cofer," or chest in which the stamps-heads work, may be seen in its simplest form, perhaps, in some of the small apparatus used in the gold districts of Eastern Europe. In Wallachia, for instance, you may see numbers of these small stamps, a small water-wheel working three or four heads, and the cofer being a simple strong wooden box, into which the gold stuff and the mercury (for amalgamation) are placed, and then the machinery allowed to work for several days.

In dealing with malleable material, such as gold, a prolonged action of the stamps beats it out into thin leaf, which is then floated away by the stream of water which is constantly flowing through the cofer. Experiments at Schemnitz showed that one-fourth, or even a larger proportion, was lost in this manner. As in cracking a nut with a steam-hammer the blow must be regulated so as just to break the shell and leave the kernel uncrushed, so with the stamps you require to give one such blow to a particle of the ore as shall suffice to break the surrounding material and set the kernel, as it were, free. The outlet of the cofer, therefore, must be arranged so that the same material may not be struck twice. The stuff passes into the cofer usually by means of a hopper with a sloping floor, down which the water may be allowed to trickle. A cross-piece is sometimes attached to one of the stamps-heads, so as to strike the box, or hopper, when the head falls too low, and so shake down more material. Other kinds of arrangement may be adopted for a like purpose, or the general tremor of the whole apparatus may be of itself sufficient. In arranging the working of the head it is necessary, as we have seen, to diffuse the strain as much as possible. The question occurs, in what order must the heads be taken up? They must be taken up in definite order, so as to have a definite rhythm, and it is desirable never to take up in succession two adjoining heads. Usually the head at one end is raised, then that at the other, and then the middle heads. A great deal might be said about the nature of the outlet: it must not be too small to allow the material to escape when sufficiently reduced. In the stamps formerly used at the copper mines the exit was formed by nailing a series of bars across an open side and the ends of the cofer, and then it was necessary to see that the spaces between the bars did not become clogged. A very good improvement was to have the exit at a somewhat higher level than the bed of the cofer, so that the water had to lift the material, thus ensuring its proper pulverization before being allowed to escape. At the present day, something in the shape of a punched plate of iron, with from 60 to 300 holes to the inch, is employed. It is impossible to say, *a priori*, what size of holes would be found most convenient for a given class of material. In other cases the water is allowed to run over the lip of the cofer, carrying with it the fully pulverized matter; and in order to prevent the flush, or swell, caused by the fall of the heads to a great extent, a sliding door is placed between the heads and the lip. The question arises as to what amount of work can be expected to be done by these machines. It is a difficult matter to compare the actual work of different stamps, unless we know exactly the amount of comminution needed. But we may, perhaps, come to the conclusion that, if the stamps-heads and lifters are of suitable weight, giving a sufficient number of blows—at the least 60 per minute for each head—and with ordinary material, something like one ton should be stamped in 24 hours by each head. By the side of this result all the grinding apparatus, except the crusher, fall into insignificance as to the amount of work they can do. In some of the American mines the quantity sometimes comes out as much as two tons; but we must remember that the openings in the cofer plate are larger than before mentioned. One case is recorded where, with Cornish stamps of an extremely heavy character, each head weighing from 1,000 to 1,250 lb., with lifters 12 to 16 feet, giving 60 blows per minute, as much as 3 to 4 tons were stamped in 24 hours; but we require more details as to the magnitude of the apertures, etc.

Other varieties of apparatus have been proposed, from time to time, but none have as yet come into competition with the stamps just described. Varieties of the Nasmyth steam-hammer have been proposed—a heavy hammer weighing 4,500 lb., giving 84 to 90 blows per minute, connected directly with a steam cylinder. Another apparatus, which is not yet thoroughly perfected, is the pneumatic stamp. In this there is an air cylinder 14 inches long, with holes towards the upper and lower parts of the sides for admission of the air; the cylinder is connected below with the stamps-head. A piston in the cylinder is connected, by means of a piston-rod passing through a stuffing-box in the top of the cylinder, with a crank, the throw of which is only 10 inches. The air in the upper part of the cylinder is compressed when the piston passes upwards, and thus it forms a considerable air spring; the effect of this is to raise the cylinder and stamps-head, and, although the throw of the crank is only 10 inches, the head is thrown out, as it were, to a distance of 15 to 18 inches. Similarly, as the piston descends it forms a second air spring in the bottom of the cylinder. The above dimensions refer to a 6-throw crank, working as many heads, this being the greatest number yet employed.

The only other point remaining to be noticed appears very simple, but, indeed, is not universally agreed upon—the nature of the bed on which the stamps ought to beat. In the American stamps described, a circular iron anvil with a square base is used. In this country, a cast iron bed-plate sometimes forms the bed; in many other cases it is preferred to let the stamps beat their own bed, some of the hardest material for the veins being thus beaten down. It need hardly be said that all below the stamps must be as strong and firm as possible, and needs considerable care when you have not the solid rock to come down upon.—*London Mining Journal.*

A COLLIERY IN CENTRAL INDIA.

Excepting for the class of workmen employed, an English visitor to the Warora Coalfield of the Central Presidency, which is being developed for the Government by Mr. Walter Ness, would conclude that he was in one of our leading colliery localities at home. A photograph taken of the pit machinery at a Lancashire colliery, for example, would be much like a photograph taken at Warora. Four years ago this month the machinery, which has for some time been drawing 500 tons a week and placing it in the trucks of the Great Indian Peninsular Railway, was shipped from England. At that time the railway stopped at Hingun Ghaut, thirty miles from Warora, and the consignment of 100 tons had in many a trip to be conveyed upon gun-carriages lot by lot over such bullock roads as the country provided from the railway to its present home. Energetic and vociferous, we can well understand, must have been the shouts of the thirty drivers of the teams, occasionally of sixty yokes of bullocks apiece, dragging that machinery to Warora. Arrived there, it was some time before it could be made to assume its present trim appearance. One shaft had been sunk to a depth of some 170 feet, but it had to be taken down to a depth of 210 feet, and a second shaft, which took two years to complete, had to be wholly sunk. What were the difficulties in sinking the first shaft to the required depth will be inferred from the fact that at one time the "come" of water was 800 gallons per minute; and how slowly at first the shaft-sinking proceeded will be further assumed from the circumstances that it had to be done wholly by native labor, the coolies standing up to their waists in water and working at the friable sandstone formations with such an apology for a pointed crowbar as they could wield, for the employment of a pickaxe in a cooly's hand was a great advance in native handicraft skill. By-and-by both shafts—which are 150 feet apart—had been sunk, and the drawing shaft provided with double skips sliding on wire rope conductors. The two winding engines, which are of modern construction, are capable of drawing 300 or 400 tons a day, and they have an iron pit-head frame with wire drawing rope. Two other engines of 18 and 25 horse-power respectively work a couple of 12 inch pumps of 5 feet to 6 feet stroke, and have a capacity of running 14 strokes each per minute. One of them is fitted with gear of 3 to 1 and the other with gear of 5 to 1. The four boilers are each of 20 horse-power.

One of the earliest erections upon the surface was a workshop with the three departments adapted to the smith, the fitter, and the carpenter. The smithy has three hearths, possessing fan blast, a steam hammer, and a crane for lifting heavy forgings. The fitters' shop has two lathes, a drilling machine, a nut and bolt machine, and a steam engine for supplying driving power. The carpenters' shop has a bench suitable for cutting up timbers for the pit, and the requisite benches and tools for general carpentry work.

To aid him Mr. Ness took out a blacksmith, a pit foreman, and a carpenter. The difficulty which these men found in training the natives to do even a moderate amount of work will appear to every one who remembers that native smiths and carpenters are accustomed in India to work sitting. From the beginning Mr. Ness made it a necessity that European methods should be adopted. How to stand behind his anvil, and forge even a slender bolt, the cooly smith could not at first tell; and, compelled to work at a bench, the cooly carpenter, directly the back of the overseer was turned, would leap upon his bench and try to do his work sitting. The teachable fellows persevered when they found that they must, and they conquered their bad working habits. Three years ago the smiths, for example, were able to forge only a half-inch bolt with a piece of plate iron between their legs as an anvil, wielding as a hammer what looked like an old pump bolt with a good thick head on it, and having a fire which was deftly blown with a pair of ragged old goat skins for bellows. Now, however, the same men may be seen standing behind their anvil putting on a piece of shafting of from 6 to 8 inches in diameter. The men are made very comfortable in their workshops, and around the pit. They are sheltered by roofs of corrugated iron open from end to end, so that an agreeable breeze may play through, though outside the temperature may be very high. In the engine room the temperature in May last year was 109°, in the workshops 105°, in the middle of the shaft 90°, in the underground workings 86°. The 105° in the workshop was less hurtful to the European than the 86° since on the surface the air is so dry that the evaporation is rapid.

The progress of the coolies underground has been as marked as the progress of the workers on the surface. They do all their own blasting, and in the four acres of workings which are open they could be trusted with 5 cwt. of powder a week. They now wield picks of the same weight as those used in England; and though four of them are needed to do the work of an ordinary British collier, yet by-and-by three, Mr. Ness computes, will accomplish that task. They work continuously night and day in four shifts of six hours, and are six hours on and twelve hours off, so that at the end of the week they have worked six days of eight hours. The arrangement works well, and tends to keep them in good health. The drawing and other surface work is continued throughout the day only, the working hours being from six to six, with one and a half hours off for meals. The operatives number together between 300 and 400. The colliers are paid from 3 to 6 annas (from 4½d. to 9 d.) per day, according to competency, and the surface workers from 3 to 4 annas. Employment is eagerly sought, and the people once engaged show a great desire to remain. Even Brahmins will take to the pit. There are nearly thirty such working below ground side by side with the coolies. This is a great success, and promises the gradual breaking down of caste. It will be observed that in the habiliments of the native workman Mr. Ness has been successful in making progress towards European costumes. Better still, he has secured the universal observance of the Sunday as a day of rest, and closed bazaars amongst all the 3000 to 4000 people at Warora; and he has a religious service open to all Christians every Sunday. Neither in sinking the pits nor in working the coal has a single life been lost. The only accident that has happened arose out of five men getting into the cage at the top of the pit when the engineman was away from his engine, by which one life was sacrificed, the man having leaped out as the skip descended.—*The Engineer.*

MINING NEWS.

Staff Correspondence of the Engineering and Mining Journal.

COLORADO.

Georgetown Courier.—The Silver Plume concentration works have been bought by Mr. F. Ballou, of the firm of Olmsted & Ballou.

A good ore strike has been made on the Matilda Fletcher Mine, which has been non-producing for several years. Another is reported on the Dunderberg.

A new organization has been effected in New York on the Douglas mining property. The visible property of the company consists of the Douglas Tunnel, which under-cuts the mountain of the same name below Georgetown, and has been pushed in about 800 feet. Three lodes, we believe, have been cut. The tunnel is to be pushed ahead. The veins on this mountain carry both silver and gold.

The old California Mill at Mill City has been fitted up for concentration.

The Specie Payment Mill at Idaho is now running with 25 stamps, and running well.

The Bement ore-buying works at Idaho have been fitted up for concentration.

A larger number of mines are now at work in the vicinity of Idaho than ever before. Seaton Hill and Gilson Gulch are full of men. Trail Creek is growing rapidly in population, owing to the very successful development of the Freeland, and a number of mines around the Hukill are being worked. Another season's labor will make considerable difference in the condition of affairs around old Spanish Bar.

The production of the Red Elephant mines continues on the increase, and is now footing up between $70,000 and $100,000 monthly. The Boulder West, Free America, White and Flat Iron are the leading mines. A new discovery of considerable importance is just reported about 100 feet above the America. This district will add at least $400,000 to the bullion yield of the county this year.

San Juan.—The Wheel of Fortune lode, which has recently been purchased for $160,000, is to be worked all winter. The mine, in answer to the developments put upon it this summer, has proven to be one of the finest ever opened in the State. The buildings of the Gunnison Silver Refining works at Tellurium are nearly completed. The machinery is expected in a few days.

Silver World.—The Belle of the West is to be worked under lease during the winter. Plenty of fine ore is in sight, and the output, which will be stacked up, will probably be very heavy before spring. The first silver brick from the San Juan and St. Louis works at Ouray has been produced. It was 850 fine.

GENERAL NOTES.

The completion of the Cheyenne branch of the Colorado Central Railroad opens another route from the State to the East by way of the Union Pacific Railroad, and will affect the growth of the mining industry considerably. The connection at present affects most favorably the three northern counties of Boulder, Gilpin, and Clear Creek, which, as yet, are the heaviest bullion producing localities of the State, and will doubtless continue to hold that position in the future. The surveyors are now examining for a route through which to continue the Georgetown branch into the South Park, and it is not unlikely that a practicable grade can be found.

The Golden Smelting works are now shipping gold and silver bullion at the rate of $1,000 and over per day. This establishment, through careful business management and square dealing, has grown into the position of the second reduction works in the State in point of shipments. It has established agencies at all the neighboring mining centers, and is increasing its purchases largely. The system employed is a combination of matte and lead smelting, by means of which the company can pay for both copper and lead as well as the precious metals.

NEVADA.

Silver State.—At Cornucopia the three principal mines, the Leopard, Panther, and Hussey, are looking well, and maintain a steady production.

In the Infidel Mine, Bull Run Basin, a body of very rich ore has recently been found.

Heavy shipments from the Pacific Sulphur Mine, at Rabbit Hole, have begun.

Austin Reveille.—A short miners' strike in the Manhattan Company's mines occurred on the 13th. The trouble involved was one of wages, and was instigated by the Miners' Union of that place. The strike was ended on the afternoon of the same day. The company is shipping from $100,000 to $125,000 in bullion monthly. It has paid $400,000 in dividends, without any assessment.

Washoe.—The bullion tax for the quarter ending September 30, for Storey County, was $125,000.

Our latest mail advices report the excitement in Ophir as still great. The new ore body, or pocket, whichever it shall prove to be, was struck on the 1,900-foot level.

The recent corner in Exchequer, which resulted in large profits for a few, and heavy losses for many, has called forth unusually severe condemnation from the California papers, who condemn it as a case of obtaining money under false pretenses. After studying the facts in the case, though the transaction was undoubtedly a gamble, there appears to be no special reason for its condemnation by Californian brokers, except that they were losers, and the New York (Wall Stree) brokers who won were outsiders.

A committee has been appointed and is at work for the purpose of ascertaining the cost of pumping water from the Comstock mines. Information on this question is necessary, on account of the near approach of the Sutro Tunnel to the lode, and the fact that at its completion the mines on that vein will have the alternatives presented to them, either of accepting Sutro's aid at his figures, or pumping and hoisting at current rates. The matter will be thoroughly examined. It will probably end in a compromise proposition to the tunnel.

A recent professional examination of the Overman mine has been made, and it was concluded that the mine gave excellent promise of a large and valuable ore body within a few hundred feet of present workings. Overman claim shows below two ledges which are expected to unite and form a mammoth vein. This mine has been a fine one in the past, and no doubt, if explorations are pushed, will be so again.

The lowness of water in the Carson River, in whose valley a large number of Comstock mills are located, is causing much delay in reduction of ores. All the producing mines have overstocked their mills. The water will, however, rise in a few weeks.

NORTH SHORE OF LAKE SUPERIOR.

Our special correspondent sends us the following notes from Prince Arthurs, Ont., under date of November 16:

The close of navigation finds mining matters very dull. Silver Islet works a small force preparing the ground for putting in the brick arch as soon as the frost is out next spring. Mr. Miner, he of the divining rod, has been just pointing out untold hidden wealth; and the drill is now at work at places that he indicated. So far some veins have been found, yielding nothing; but the big strike is to come.

Colonel Wilson works with a small force, sinking on the 2 A vein, where good indications were had.

At the Duncan, the explorations with the diamond drill will be continued during the winter, and Mr. Courtis remains at the mine to direct the work. At about 550 feet from the surface, the best indications have been found since the surface silver was left.

The recent "gold discovery" on the mainland is undoubtedly a swindle.

PETROLEUM NOTES.

PRODUCTION, STOCKS, SHIPMENTS, ETC., OF THE PENNSYLVANIA OIL FIELDS, BY DISTRICTS, FOR OCTOBER, IN BARRELS OF 42 GALLONS.

Number and Name of Districts.	PRODUCTION ACCOUNT. No. bbls. of oil on hand at the wells at the close of the month.	No. of bbls. of oil produced in the month.	Average per day for the month of 31 days.	No. of bbls. of oil in iron tanks, pipe lines and refineries.	Total No. of bbls. of oil held in all the districts.	DRILLING WELL ACCOUNT. No. of wells producing.	No. of wells drilling.	No. of wells completed in October.	Aggregate daily production of new wells.	Daily average of new wells.	No. of Rigs building.	"Dry holes in Oct.
Butler ..... } Parker ..... } Clarion ..... }	80,000	762,600	24,600	1,885,716	1,965,716	4,300	318	264	2,700	10	170	38
Scrubgrass....	3,500	155,000	5,000	8,000	11,500	270	22	28	920	40	21	9
Franklin.....	500	12,400	400	20,000	20,500	368	10	12	48	4	10	3
Reno	.....	3,100	100	8,000	8,000	31	....	....	....	....	....	....
Oil City.....	1,000	26,350	850	195,300	196,300	362	3	3	12	4	3	1
Rouseville	400	12,400	400	8,000	8,400	200	....	2	5	2½	....	1
Rynd Farm...	450	12,400	400	4,810	5,260	125	....	2	12	6	....	..
Columbia....	5,824	4,030	130	4,000	9,824	31	....	....	....	....	....	..
Petroleum Cr.	400	3,100	100	12,000	12,400	50	....	....	....	....	....	..
Shamburg	400	6,200	200	8,000	8,400	96	....	2	4	2	....	..
Titusville.....	1,478	50,935	1,645	63,522	65,000	760	12	12	240	20	10	4
Pithole.....	406	6,200	200	10,326	10,726	78	...	2	8	4	....	1
Fagundas.....	3,000	6,200	200	6,000	9,000	150	....	1	5	5	....	..
Tidioute.....	4,000	13,330	430	14,000	18,000	80	6	6	30	5	4	1
Warren.....	1,000	17,081	551	19,223	20,223	120	7	8	64	8	6	2
Bradford.....	8,000	172,515	5,565	125,657	133,657	900	188	120	1,200	10	757	9
Beaver.....	500	5,425	175	606	1,106	140	7	5	25	5	4	1
Totals	110,844	1,269,326	40,946	2,393,160	2,504,012	8,062	573	467	5,273	11⅓	385	70
Total for Sept.	109,162	1,214,910	40,497	2,394,495	2,503,657	7,872	535	322	5,011	15½	426	60

—*Petroleum Reporter.*

ACTIVITY IN THE CLARION REGION.—A correspondent of the same paper writing from this region says the Clarion oil region is just now experiencing livelier times in the way of operations and new developments than it has ever done heretofore. The number of wells going down is simply enormous, and the statistics total for November will far exceed that of any previous month. The principal field of production, and that wherein lies the most excitement at present, is the Eastern belt, or what is known by that title in the district. A large number of "wildcats," or test wells, have gone down off the eastern edge of the defined line, but with very few exceptions they have proved dusters. The venturesome operators have succeeded in widening the belt but little, although a great deal of money has been spent for that purpose the present summer. The most prolific territory appears to be in the vicinity of Slam Bang City, a new town on the Twenty-two degree line, and situated between the Stone Church and Shippenville. The Davis well, struck at this place, about three months ago, started off at 400 barrels a day, and has averaged about 125 barrels ever since the "head" was pumped off. Several other wells have been struck in the same vicinity, the largest being that of Cram & Co., on the Wood farm. This one made 750 barrels the first twenty-four hours, and is yet doing over 100 barrels a day.

A good deal of operating has also been done on what is known as the Middle belt, but the territory is all old and developed, and no big strikes have been effected. The Western belt came into existence in May last. Three wells which had been sunk previous to that time proved dusters, and the first oil was found in that month. The next well down on this belt was the great Howe gusher, which did 400 barrels the first day. After that strike operators went crazy, and scores of holes have been put down since. About one-half of them are dry, while the others are gradually and fast decreasing in production. The sand is very tight and thin, and the pumping wells decrease after the style of the Bullion gushers.

THE CALIFORNIA OIL REGIONS.—The San Francisco *Stock Report* of the 16th ult. says the petroleum interest of San Fernando is decidedly looking up. A great deal of San Francisco capital has been invested in the district, and if the results come up to the expectations of the sanguine oil people, there is the possibility of an oil and coal exchange being started in this city to deal in securities of this kind, as mining shares are handled in our three mining boards. There is no question that San Fernando is a great oil region; it is dotted with natural flowing oil wells, and the ground is so saturated with oil throughout the whole district that, in driving the long railroad tunnel, a steady flow was tapped. The presence of petroleum was known years ago, but want of capital, the absence of a local market, and the cost of transportation, combined to keep back the district. The pioneer claim, known as the Leaming, has been under the control of its present chief owner, Dr. V. Gelcich, for twelve years. At one time it shipped thousands of barrels of oil, which was used by the Metropolitan Gas Company of this city; but when that company was bought out the demand slackened. The completion of the railroad has brought San Fernando into connection with various markets and shipping points. Newhall and Andrews' Station, on the line of the road, are in convenient proximity to the wells, the latter point being about four miles from the center of operations and connected by a good road. The Star Oil Company, whose wells are in Pico Canon, have refining works near Andrews' Station which have a capacity of 160 barrels every twenty-four hours. The Leaming Company owns 160 acres of valuable oil land, lying between the Rice and Wiley claims, and on the company's ground is a steadily flowing well. In addition, it is proposed to bore for further supplies. The company has been incorporated in this city with a capital of one million dollars, divided into ten thousand shares of one hundred dollars each.

A large tract of rich oil land was discovered recently about twelve miles northwest from San Buenaventura, and already 8,000 acres have been located. Green oil of excellent quality is found in large springs. The owners will at once start two or three prospecting wells.

Considerable excitement exists over the discovery of oil in Tulare County, many wells are being sunk, and a company is to be formed to operate on a large scale.

THE PRODUCERS' PROTECTIVE UNION held its second meeting at Titusville, on the 22d ult. As upon previous occasions, the proceedings were conducted in secret, no one being admitted except members of the union. A perfect unanimity

prevailed, together with a growing interest and increased determination to gain their point, and to place themselves in a position of protection against monopolies. The meetings will probably be continued into next week. A production of at least 30,000 barrels per day is represented. The delegates attending this meeting—of which there are 175—represent, in oil lands, production, machinery, etc., over $75,000,000. This is only about one-half of the wealth involved in the production, refining and transportation of petroleum. The object of this organization is to combat any attempt at a monopolization of the oil fields or pipe lines, and to take steps for the protection of the rights of the trade and the enhancement of the price of oil.

THE PETROLIA (ONTARIO) OIL MAKET.—The *Petrolia Advertiser* of the 23d ult. says: A slight improvement has taken place in the American market, but not sufficient to warrant an increase here. The refined oil market has been dull, and dealers are holding where practicable for better prices. If we are to judge from orders to sell during the week producers have the utmost faith in the market of the future, the fact being that the sales have exceeded the deliveries. This is especially gratifying to the crude trade, since it was at one time feared considerable time would elapse before the new association would succeed in commencing business. Among the new wells there is nothing of importance to relate. One or two tolerably good wells have been obtained lately, but on the whole drilling has been a sorry speculation during the entire season—most of the operators having been unsuccessful. In the States it has been somewhat the same, but the percentage of wells obtained there has been much larger—without, however, increasing the production; that is, the new ventures have only been sufficient to supply the place of the older wells giving out. The shipments of oil from Petrolia from Jan. 1 to Nov. 22, 1877, was 256,240 bbls. of crude, 53,706 bbls. of distilled, and 12,170 bbls of refined. The following is a reliable statement of the number and capacity of oil wells in this district:

Wells pumping	517
" drilling	10
" repairing	14
Total number of wells	541

Daily production, 1,650 barrels, or about half a million barrels of crude petroleum yearly.

THE OIL REGIONS OF KENTUCKY AND TENNESSEE.—A correspondent of the Titusville *Herald*, who has been traveling for six months in the oil regions of Kentucky and Tennessee, writes that they are of much greater extent than the Pennsylvania oil region. About a year ago there was a rush of speculators in that direction, and now an area extending over one hundred miles in length and seventy miles in width has been leased preparatory to drilling by some of Pennsylvania's largest and most prominent operators. The writer states that there will be an immense field open for practical engineers, machinists, tank builders, drillers, &c., so soon as capital takes hold of the development, which promises to be in the near future.

A MAMMOTH BARREL FACTORY.—The Standard Oil Company is constructing at Pittsburg a factory for the manufacture of barrels for its own use. The building will be 300 feet square, and supplied with the latest improved machinery for making barrels, with a capacity for turning out 5,000 to 7,000 barrels a day. The establishment, it is calculated, will cost about $50,000. In connection with this immense cooperage there is being erected a huge agitator, to be used in completing the process of refining oil, and to which the oil will be conducted from the refineries in the neighborhood by means of pipe lines, and barreled. These establishments will have the effect of making the locality an extensive shipping point.

COMPLETION OF THE STANDARD OIL COMPANY'S NEW PIPE LINE.—The new pipe line between Great Belt and Pittsburg was finished on the 24th ult. It is thirty-six miles long, and will supply twenty-eight refineries in Pittsburg, all owned by the Standard Oil Company.

DISCOVERY OF OIL IN JEFFERSON AND GREEN COUNTIES, PA.—Oil has just been discovered oozing from the crevices of a rock along the banks of Stump Creek, Henderson township, Jefferson county. The residents of the vicinity of the discovery believe it to be a genuine flow of natural oil, and are about putting down a well. A correspondent of the Oil City *Derrick* says where it most abundantly appears there is a bed of argillaceous shales, but it also permeates other altitudes of the ravine. We note the statement that a sixty barrel well has been discovered in Green County, Pa.

AN ADVANCE IN OIL FREIGHT RATES.—At a meeting of the representatives of the trunk lines, held in this city recently, it was agreed to advance the freight rates on oil about twenty-five cents a barrel, the advance to take effect December 1.

DISCOVERY OF OIL IN WEST VIRGINIA.—Oil has been discovered in the Kanawha Valley, W. Va., 3¼ miles from Charleston.

THE Pennsylvania Petroleum Railroad, graded from Titusville to Cambridge, has been abandoned.

A PRISMOIDAL one-rail railway is in course of construction in the Bradford oil district.

THE MARKET AT NEW YORK.—The *Shipping List* of the 24th ult. says:—Crude has been quiet at the advance before noted. Bulk is quoted 8¼ cents, and barrels 11@11½. The market for Refined has been quiet, and the limited transactions reported have been at lower prices, although the market closed higher. We note sales of 2,000 barrels cash, at 13 cents; 2,000 barrels in Philadelphia, 13c.; 3,000 do. in Baltimore for December, 13¼c. At the close 13½ cents was bid for cargoes, but refiners refused to sell. We also note sales of about 50,000 cases, mostly at 17c. Naphtha is neglected, and nominal at 7@8 cents. Residuum is held a little firmer, and is now quoted 7 cents. Certificates are without decided change. The sales are 70,000 barrels United, at $1.94⅜@$2.15, of which 20,000 barrels yesterday, at $2.01⅛@$2.08⅛. Oil City, $2.22½ bid. Parker's heavy unsteady, with $2.03⅛ bid; for Certificates, weaker and declined; price $2.01⅞ bid. Shipments quiet, not much demand; held $2.25. Charters—from New York, 6,000 barrels Crude, 2,000 do. Naphtha, 6,800 do., and 37,000 cases Refined. From Philadelphia, 16,500 cases Refined. From Baltimore, 10,600 barrels Refined, and 1,900 do. Crude.

EXPORTS OF REFINED PETROLEUM.

	1877.	1876.
Since our last.....Galls.	1,784,435	....
Previously, Since January 1.....	216,237,266	112,040,890
From other ports.....	90,862,881	95,953,542
Total.....Galls...	308,884,582	217,994,432

NOTES.

SALAMANCA AND BRADFORD RAILROAD.—It is proposed to build a narrow gauge road from Salamanca, N. Y., by way of Limestone to Bradford, Pa., the center of the new oil region. The distance is about fifteen miles, and the estimated cost $75,000.

THE FIRE IN THE BUTLER COAL MINES.—The Hazleton *Sentinel* of the 29th November says: "There is a fire raging in the Butler mines, which may prove a costly experiment yet before extinguished. Efforts are being made to drive a gangway around it, which is thought to be the only method of bringing it under control."

EARLY LIGHTNING-RODS.—Dr. Munke quotes a passage from the *Talmud*, written in the fourth or fifth century of our era, permitting the use of iron "as a protection from lightning and thunder." Wiedermann, in an editorial note, adds that the Egyptians appear to have used gilded masts "for warding off the bad weather coming from heaven."

THE SEPARATION OF IRON ORE BY MAGNETISM.—Mr. King, of the Ballycorus mines, Isle of Man, crushes his ore, which is composed of galena, blende, and spathose iron ore, and after separating the galena, roasts the residue to a dull red heat in revolving retorts, thus producing a magnetic oxide of iron by decomposing the carbonate of that metal. The ore is then put into drum wheels having magnets arranged radially within; here the magnetic is separated by attraction, and the blende left to escape clear.—*The Engineer.*

RICH GOLD AND SILVER DISCOVERY IN PERU.—According to letters received in Valparaiso, there has been a grand discovery made at a place a few leagues from Arequipa. The discovery consists of a rich vein of gold and silver ores. It is said the vein is some seventy meters in length, and broader than any vein of metal yet discovered in the world. The lay of the ore is four ounces to the cajon, and according to assays made in Copiapo of samples remitted there, some of it reaches fifty ounces. Seventy-one quintals of the metal sold in Arequipa are said to have produced 20,000 soles.

PROPOSED CO-OPERATIVE ROLLING MILL.—The Schuylkill, (Pa.,) *Republican* says: "The labor movement at Pittsburg has resulted in the proposition to erect an iron mill upon the largest imaginable scale, to be run on the co-operative plan. The scheme will require a capital stock of $1,000,000. The stock is to consist of 1,000,000 shares at $1 each, and no one is to be allowed to own above five shares. No workingmen are to be employed in the mill who are not stockholders, and as it is proposed to do their own mining, the announcement is also given out that no one will be employed to do work of this class who is not personally interested in this scheme as a holder of stock."

HEAT WAVES.—Prof. Piazzi Smyth, of the Royal Observatory, Scotland, says that the coming winter is to be exceedingly cold. From the observations of earth thermometers over a period of 39 years, he finds that between 1837 and 1876 three great heat waves from without struck Great Britain, namely: The first in 1846·5; the second in 1858—0, and the third in 1868·7. The next one will probably come in 1879—5, within limits of half a year each way. The periods of minimum temperature, or greatest cold, are not in the middle time between the crests of these three heat waves, but are comparatively close up to them, on each side, at a distance of about a year and a half. Hence the next cold wave is due at the end of the present year, and very frigid weather may be looked for.

WAGES ON BOHEMIAN RAILWAYS.—The Consul of the United States at Prague writes to the Department of State at Washington that, in view of the recent railway strikes in Pennsylvania, Ohio, and Illinois, he has taken the trouble to complete a table of the wages paid to persons employed on the Bohemian railways. Their compensation is made up of several items, such as wages, rent allowance, compensation for distance run, and for the saving of coal and oil. Engineers thus get 1,000 to 1,335 Austrian florins per annum ($470 to $627). Stokers receive from 600 to 685 florins ($282 to $330). Conductors are divided into two classes, the lowest receiving more than the stokers, and the highest less than the engineers. Blacksmiths, carbuilders, boilermakers, and other skilled mechanics receive from 1 florin to 1½ (47 to 71 cents, silver) for a day's work of 10 hours, while the common laborer is paid but 50-100ths of a florin, or about 43 cents.

THE SALT TROUBLES ON THE RIO GRANDE.—In Western Texas are numerous salt lakes. Near El Paso several lakes have long afforded the salt used in Eastern New Mexico, Chihuahua. These lakes being the property of the State of Texas, the salt made from them has until of late been free of charge. Foster, Ludlow & Co., of New York, in connection with George B. Zempleman, and his son-in-law, Charles H. Howard, managed by entry to overlap these salt lakes, and at once advanced the price of salt to 40 cents a bushel, while the demand for table, cattle, and metallurgical uses is about 300,000 bushels. While the salt was free at the lakes the price in Chihuahua was $4 per 2½ bushels. So dependent is Northern Mexico upon Texas for salt that, on the fact being known in Chihuahua that the above parties had obtained a monopoly of the salt supply by the purchase of the lakes, the price of salt advanced to $3 a bushel. This condition of things will be a great disadvantage to the silver-producing interests of that State.

WIRE ROLLING EXTRAORDINARY IN WARRINGTON.—The Pearson and Knowles Coal and Iron Company have of late turned special attention to the rolling of exceptionally long lengths of wire rods for fencing and other purposes, and with this object have adopted Mr. J. J. Bleckly's patent four-high wire mill, the results obtained from which, both in length of rods and amount of work turned out, are, we believe, quite without precedent. Last week, in two shifts of ten hours each, the extraordinary quantity of 40 tons 9 cwt. 2 qrs. of No. 4 finished puddled wire rods were rolled in this mill, the individual rods ranging in weight from 45 lb. to 70 lb. each; and the average production of the mill during the whole week was 18 tons 2 cwt. 2 qrs. of No. 4 iron per shift of ten hours. One distinguishing advantage obtained in this mill is that, in consequence of the arrangement of the rolls, only one-half the number of men usually employed in a wire mill is required.—*Warrington Guardian.*

COAL TRADE.—We extract the following from a recent letter to the Ohio *State Journal:* "The coal trade is active, with surplus orders at all the mines, or rather a want of cars to meet the demand for the first time since the panic. Our streets are free of idle miners, and we hear no complaint of poor pay. The iron ore miners are busy getting in their work before the coming of bad weather. The coal miners at Shawnee are on full work and the cry is more cars. With twenty-seven coal mines, thirteen furnaces, and three large salt works, all in operation, Straitsville and Hocking Valley mineral field will be heard from in a substantial way, in helping to put life into the business of the country, and especially your city. But this is not all. Many more furnaces will be built and coal mines opened the coming season. New developments of iron ore are being made every week, and frequently in places where least expected. It looks as though all the good iron making coal of the great vein will be wanted here at home to smelt the ores; also, that the value of our mineral lands has been very much under estimated."

THE MAGNITUDE OF THE PITTSBURG IRON INTERESTS.—Pittsburg claims pre-eminence as the center of the iron manufacturing interest in this country. In that city and its immediate vicinity there are to-day thirty-three iron rolling mills, whose capacity for production is 450,000 tons, which is equal to one-ninth of the whole capacity in the United States. And there are employed at these works when in full operation, 10,148 hands, whose wages average $6,560,000 annually. They produce, when running full, about 35,000 tons of bar, sheet and plate iron; also, about 1,200,000 kegs of nails. The total value of the product is estimated at $20,000,000 per annum. A recent investigation into the condition of the Pittsburg iron trade reveals the fact that, whilst the effects of the blow inflicted by the panic of 1873 have not entirely passed away, there are indications of a revival in all branches of the business. A large demand for iron has come from all quarters, and nearly all the manufacturers have orders for work. The first foundry in Pittsburg was erected in 1803, on the site now occupied by the post-office. Its products at first were pots, kettles, and other domestic utensils, but in a few years it was called upon to make cannon balls for the government, and in 1811–12 the first cannon made west of the Allegheny mountains was

cast by this foundry, the establishment being kept busy thereafter furnishing cannon and shot till the close of the war, in 1814. The first water-pipe and the first rolls were also made there, and it was in this pioneer establishment that James Harley, a moulder, discovered the method of making chill rolls.

COAL PRODUCTION.—The coal production of the world has enormously extended during the last thirty years. The six principal coal producing countries are Great Britain, Belgium, the United States, France, Prussia, and Austria, including Hungary. These countries produced in 1845 an aggregate of 49,211,400 tons of coal, this aggregate being made up as follows: Great Britain, 31,500,000 tons; Belgium, 4,960,077 tons; the United States, 4,400,000 tons; France, 4,141,617 tons; Prussia, 3,500,000 tons; and Austria, 709,706 tons. In 1874, the corresponding aggregate production of the six countries had grown to no less than 253,650,700 tons—Great Britain contributing to this imposing array of figures 125,043,300 tons; Belgium, 14,669,000 tons; the United States, 42,423,900 tons; France, 16,949,000 tons: Prussia, 41,754,600 tons; and Austria, 12,810,900 tons. Great Britain produced nearly one-half, it will be seen, of the whole coal extraction effected by the various nations under review. The immense supremacy of Great Britain over her neighbors in the matter of coal mining is reflected in the fact that, in 1874, this country raised 39 tons per head of its population, the corresponding proportion in the case of Belgium being 28 tons, in the case of the United States 10½ tons, in the case of France 4¾ tons, in the case of Prussia 17 tons, and in the case of Austria 3½ tons. The coal extraction of Great Britain, in 1874, was ten times as large as the corresponding production of Belgium, three times as large as that of the United States, three times as large as that of Prussia, eight times as large as that of France, and ten times as large as that of Austria. The coal production, per head of the population, effected by Belgium in 1874, approached more nearly to that of the United Kingdom than that of any other country.—*The Engineer.*

ASBESTOS MINES IN CALIFORNIA.—The *Calaveras Chronicle* of the 27th ult. says: The asbestos excitement in this county is increasing, and the probabilities are that the production of that mineral will yet become one of our leading industries. The vein can be traced across the entire extent of Calaveras—from the Mokelumne to the Stanislaus—varying from 2 to 25 feet in width. The quality is also variable, the substance in some places being coarse and brittle, while in others the fibers are as fine and soft as silk. A shaft has been sunk to a depth of 40 feet. At the surface the asbestos is of a splendid quality, but deeper it does not show so well. It is the opinion, however, that when the water level is reached the quality will improve, approximating, at least, that found at the surface. The shaft is not being sunk directly on the lode, it being almost an impossibility to dig through the tough, fibrous material, and no cross-cut has been run below a depth of ten or twelve feet. When the water-level is reached a cross-cut will be run, and if the mineral proves of as good quality at that point as it is at the surface, the company will have a valuable property. It is thought that the inferior quality of asbestos, which splits into sheets or laminæ, like slate, would be excellent for lining up furnaces, and a quantity has been shipped to San Francisco to be tested for that purpose. Soapstone, now generally put to such uses, is not absolutely indestructible by fire, and if asbestos can be substituted for it a largely increased demand will be created for the latter.

IT has been found that "simultaneous and synchronous vibrations manifest mean forces of the second, third, and fourth degrees; and for these new apparent forces the principle of equality between action and reaction subsists, while they also show a great resemblance to planetary forces. Thus two spheres, having concordant pulsations, attract each other inversely as the square of the distance; they repel each other, according to the same law, if their pulsations are opposed."

THE IRON ORE DEPOSITS IN CALAVERAS COUNTY, CAL.—The *Stockton Independent*, in speaking of these deposits, says:

"The ore lies in a handsome body, about one hundred feet thick, and can be traced by the outcrop for a mile alongside of a gulch tributary to one of the forks of the Calaveras. The ore yields over forty per cent. of pure iron, and is considered of excellent quality, equal, if not superior, to the ore from which the best Scotch pig is produced. The location of the mine for profitable working could not be surpassed. The ore vein lies between a wide stratum of limestone on one side and a vein of fire-clay, or soapstone, on the other, while on all the surrounding hills is an unlimited supply of oak and pine timber to make charcoal for smelting purposes. The iron produced by the Oregon Works, the only iron smelting furnace on the Pacific coast, commanded from $10 to $15 a ton in San Francisco more than Scotch pig, and it could not be delivered fast enough to supply the demand. Yet in Oregon the limestone for fluxing the ore must be hauled several hundred miles from the Puget Sound and handled six times in transit; the ore must be carefully selected by hand from the extraneous earth and rock in which it is found, and hauled by team several miles, while the charcoal, the cheapest of the elements required, is also hauled by team a considerable distance. The chief market for the pig iron produced is in San Francisco, to which point the freight by steamer is $5 per ton. The development of the Calaveras iron mines would alone warrant the construction of a narrow-gauge railroad from tide-water to the locality above designated, while the numerous industries along the line of the road would render such investment not only safe but remunerative."

THE DUTCH IN HOLLAND.—The following note is commended to the perusal of each of the many thousand readers of this JOURNAL; for each can contribute, by example and encouragement, to bring about "prosperity, happiness and contentment" by the same means which have produced these results in Holland: The Department of State has received a report on the social and political condition of the Dutch from the Minister of the United States to The Hague. As an illustration of the carefulness and steadiness of the Dutch, the Minister says that there has not been a bank failure in Holland during the last forty years, and that the paper money of the banks during that time has been equal to gold. In regard to fire insurance companies, there is no such thing as a failure on record, and, while the rate of insurance does not average more than half of one per cent, the companies are in the most flourishing condition, realizing twelve to sixteen per cent per annum. First class railroad travel is only one cent per mile, and yet the roads pay good dividends. Pilfering officials are scarcely ever heard of, and when they shock the nation by turning up, they are severely punished and forever disgraced. No free passes are granted, and managers and directors have no power to pass anybody over the roads free. All must pay the public rates. Dishonesty of any kind, or failure in business, means public dishonor, and utterly bars the dishonest from any future public consideration. Four millions of people live within an area of 20,000 square miles, a fact unprecedented in any other country; and all appear to be happy, prosperous and contented. *The secret of this prosperity lies in the fact that all live within their income, and that industry and honesty are principles so firmly established, that their violation is looked upon as an outrage on the national characteristics.*

INDEX OF CURRENT TECHNICAL LITERATURE.

EXCHANGES.

[In this department will be given abstracts of the more important original articles contained in current technical periodicals at home and abroad.]

The following gentlemen have kindly consented to assist in making the reviews of current technical periodicals:

JOHN C. RANDOLPH, Mining Engineer, New York.
Prof. TROWBRIDGE, School of Mines, Columbia College, New York.
Prof. H. S. MUNROE, " " " " "
Prof. T. EGLESTON, " " " " "
ARTHUR F. WENDT, Mining Engineer, New York.
MANSFIELD MERRIMAN, Yale Scientific School, New Haven, Connecticut.
FRANKLIN GUITERMAN, Mining Engineer, Cincinnati, Ohio.
Prof. P. de P. RICKETTS, Ph. D., School of Mines, New York.
Prof. E. A. FUERTES, Cornell University, Ithaca, New York.

Berg- u. Huttenmannische Zeitung, October 12, No. 41.—Notes of a journey in the United States—The Iron Industry of the Southern States, by Hugo Hartmann. (A continuation of a thoughtful article which has appeared at intervals for a year. This number deals with the history of scientific and technical progress in the United States since 1843.).... The Cannon Foundry at Elswich in England. (A description of Sir William Armstrong's large works. They cover about forty acres, extend almost a mile back from the Tyne, employ some 4,000 workmen, and in twenty years have produced upward of 4,000 cannon of all sizes up to 100-ton guns. They are driven by a 150 horse-power engine, and have two blast furnaces twenty-three meters high, yielding 600 tons pig per week.).....The Coal formations in the North of Spain, by William Koehler. (A continuation.)

October 19, No. 42.—The Coal formations in the North of Spain, by Wiliam Koehler. (A continuation.).....Heap roasting of pyrites schlichs for desulphurization, by Anton Hauch. (Schlich containing less that 2 per cent. copper best fitted for this. It is air dried in 60 days, becoming slightly agglomerated by the sulphate of iron formed. The heaps should be truncated pyramids, and may be 30x36 Vienna feet at base, 18x24 at top, and 7 feet high. The usual size is 20 square feet base, 13½ square feet top, and 6 feet high. The base is surrounded by loose masonry 1 foot high. A layer of wood about 40 to 50 cubic feet forms the base. A chimney of boards is built in the center, and canals going in from the corners, which are filled with wood. The heap is covered with clay or stone the size of beans. Four cubic feet of coal are introduced in chimney, and on top of this, glowing coal. In 24 hours the chimney is in full fire, and then the canals at the corners are lighted. In 6 to 8 days the heap is in full fire, and continues burning for 8 to 9 months, with little supervision. The 2 per cent. schlich thus roasted at Eschka contained only 13-100 of 1 per cent. CuO, the remainder being converted into sulphate and 78 per cent. of oxide of iron. The rich and poor lixiviates at Mrazek contained respectively 3·75 and 0·60 per cent. of sulphate of copper, or, referring the sulphate to the mass lixiviated, 17·85 and 14·02 per cent. The analyses are given in full. The author suggests the possible application of this means of sulphatization roasting for poor schlichs containing gold and silver.)....The Separation of Carbon, Silicon, Phosphorus and Sulphur in open hearths, puddling furnaces and Bessemer furnaces, by I. Lowthian Bell.

October 26, No. 43.—Meteoric and magnetic observations at Clausthal for September....On obtaining zinc in shaft furnaces, by F. A. Thum....(A theoretical discussion on the possible advantage of such a process as compared with the present muffle processes. For other matter on the subject by the same author, refer to No. 18 of the present year, same journal).....Copper furnaces of the Boston and Colorado works. (A short description of an accompanying drawing.)

November 2, No. 44.—Contributions to a theory on veins, by Fridolin Sandberger. (Notes on the occurrence of baryta, fluor, feldspar, and olivine in gangues, first part)....Accidents in blasting with dynamite. (Two incidents of fatal accidents which seem to show that, if dynamite cartridges are left in holes for a few hours, the nitroglycerine has a tendency to separate, and be absorbed by the surrounding rock by capillary action. In the cases noted, after the first hole was exploded and workmen began to drive a second hole near by, sudden and fatal explosions occurred after a few blows on the drill) .....Notes on a journey in the United States—Kentucky, by Hugo Hartmann. (Continued from No. 41). J. C. R.

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

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ANSWERS.

ASSAYS.

New York Office:

LXXX. T. W. H., St. George, N. B.—Specimen is chloritic schist, without value.

LXXXI. W. & L., New York.—Specimens are iron pyrites, which may contain a little copper

LXXXII. J. W., Mahanoy City.—Nos. 1 and 2. Impure soapstone, of no value; No. 3. Specular iron ore, of value if in quantity.

LXXXIII. R. H. STEARNS, New York.—Sample crushed ore contains gold, a trace; silver, 17·3 oz.; copper, 4·77 per cent.; lead, 6·65 per cent.

LXXXIV. J. FRAZER TORRANCE, Montreal.—Seven specimens, none of which contain either silver or gold.

LXXXV. L. L., Kingston, N. Y.—Sample contains iron 19·60 per cent.

LXXXVII. J. B. JAMES, New York.—Specimen of galena contains silver 1·4 oz.

LXXXVIII. C. O. THOMPSON, Worcester, Mass.—Quartz contains gold 0·02 oz.

LXXXIX. R. P. SAATS, New York.—Two specimens, each contains only a trace of gold.

XCII. M. H. STOWE, Fabers Mills, Va.—Specimen of oxide and carbonate of lead contains 73·44 per cent.

XCV. SYMINGTON, New York.—Two specimens, neither contains either gold or silver.

XCVI. R. W. R., New York.—Two samples, neither of which contains either gold or silver.

XCVII. H. BOOTH.—Sample yields only a slight trace of gold.

XCVIII. M. H. STOWE, Fabers Mills, Va.—Specimen is a shaly argillaceous limestone, of no value.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Nov. 24, and years from Jan 1st.

Tons of 2,240 lb.	1877.		1876.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co.	71,349	1,614,243	66,415	1,769,477
D. L. & W. RR. Co.	74,544	1,721,476	65,579	1,721,459
Penn. Coal Co.	30,198	932,054	28,685	980,630
L. V. RR. Co.	29,278	817,476	†	831,749
P. & N. Y. RR. Co.	1,594	40,144	†....	21,259
C. RR. of N. J.	45,3.2	1,178,591	45,269	1,225,059
Penn. Canal Co.	16,535	340,231	10,062	403,971
	268,830	6,644,815	216,010	6,953,604
Lehigh Region.				
L. V. RR. Co.	66,070	3,022,470	†....	2,475,453
C. RR. of N. J.	36,881	1,353,876	40,837	1,273,784
D. H. & W. B. RR.	1,349	28,930	1,200	40,485
	104,300	4,405,276	42,097	3,789,722
Schuylkill Region.				
P. & R. RR. Co.	154,301	6,115,967	136,309	4,462,532
Shamokin & Lykens Val.	14,236	654,058	†....	852,791
	168,537	6,770,025	136,309	5,315,323
Sullivan Region.				
Sul. & Erie RR. Co.	942	18,411	†...	29,448
Total	542,620	17,838,527	394,416	16,087,809
Increase	....	....	....	....
Decrease	....	....	....	....

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

† These reports were not received.

Receipts and shipments of coal at Chicago, Ill., for the week ending Nov. 24, and year from January 1 :

	Week. Tons.	Year. Tons.
Receipts	86,974	1,570,793
Shipments	10,068	333,648

The shipments of coal at Cleveland, Ohio, for the week ending Nov. 26 were as follows : shipped coastwise, 11,222 tons ; total for year, 276,666 tons; foreign shipments, 2,005 tons ; total for year, 80,243 Total of coastwise and foreign shipments for week, 13,227 : for year, 356,909 tons.

Coal shipped from Seattle for month of October, 6,257 tons. Total from January 1, 1877, to November 1, 1877, 37,157 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania, Railroads amounts to 127,768 tons, as compared with the corresponding period in 1876.

Perth Amboy business :

	Tons.
Received for the week	21,438
Shipped for the week	28,990
On hand Nov. 24	94,852

Belvidere Delaware RR. report for week ending Nov 24.	Week	Year. 1877.	Year. 1876.
Coal for shipment at Coal Port (Trenton)	4,994	50,443	281,442
" " " " South Amboy	4,723	488,253	401,544
Coal for distribution	4,527	175,193	163,990
Coal for Company's use	1,001	64,720	63,096

Receipts of Coal at Boston, for the week ending Nov. 23 and years from Jan. 1.

Tons of 2,240 lb.	1877.		1876.	
	Week.	Year.	Week.	Year.
From				
Alexandria and Georgetown	2,460	79,234	..	53,708
Philadelphia	17,360	635,474	8,380	548,510
Baltimore	6,303	146,009	....	135,049
Other places	8,50	237,090	1,380	262,531
Great Britain	328	13,010	409	5,449
Nova Scotia	3,358	41,377	....	24,496
Total	38,320	1,152,194	10,169	1,029,543

The Exports of Coal from Baltimore for the week ending Nov. 23 were ... tons, and since January 1st, 25,015 tons as against 22,609 tons for the corresponding period of 1876.

Coal Cleared on the Canals of the State of New York from Nov. 15 to Nov. 22 inclusive, and years since the opening of navigation :

Tons of 2,000 lb.	1877.		1876.	
	Week.	Year.	Week.	Year.
Anthracite	41,703	933,683	26,335	737,042
Bituminous	6,564	238,697	5,737	282,953
Total amount cleared	48,273	1,172,380	32,072	1,019,995
Of the above, there was cleared at tidewater ports, viz., New York, Albany, West Troy, and Waterford.	30,824	799,982	19,695	470,545
Cleared at internal ports	17,449	372,398	12,381	549,450

The production of Bituminous Coal for the week ending Nov. 24 was as follows :

Tons of 2,000 lb., except where otherwise designated.

Cumberland Region, Md..	Week, Tons.	Year, Tons.
Tons of 2,240 lb	43,236	1,439,210
Barclay Region, Pa.		
Barclay RR. tons of 2,240 lb	3,271	125,498
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	7,421	278,778
*East Broad Top	1,250	46,059
Clearfield Region, Pa.		
*Snow Shoe	1,429	35,574
*Tyrone and Clearfield	29,975	1,176,054
Allegheny Region, Pa.		
*Pennsylvania RR	3,913	159,022
Pittsburg Region, Pa.		
*West Penn. RR	4,234	160,608
*Southwest Penn. RR	778	33,383
*Penn & Westmoreland gas coal, Pa. RR.	23,608	626,020
*Pennsylvania RR	8,228	331,628

* For the week ending Nov. 24.

The Production of Coke for the week ending Nov. 24

Tons of 2,000 lb.	Week.	Year.
West Penn. RR	1,440	51,510
Southwest Penn. RR	13,809	545,483
Penn & Westmoreland Region, Penn. RR.	1,324	54,722
Pittsburg, Penn. RR	1,826	96,250
Total	18,399	749,965

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Nov. 30, 1877.

Anthracite.

The event of the week was the auction sale on the 27th inst. of 100,000 tons of coal by the Delaware, Lackawanna & Western Railroad Company. The prices received are the lowest ever realized for anthracite coal in this market. It is unnecessary to state that they come far from the actual cost of mining and bringing coal to Hoboken. The following are the prices received and quantities sold, comparison being made with prices of the two previous sales, those of June having been, heretofore, the lowest on record:

		Nov 27.	October.	June.
5,000 tons	Steamer	2.30¼	2.31¼	2.18
20,000 "	Broken	2.25½	2.44½	2.26
20,000 "	Egg	2.28	2.50	2.41½
40,000 "	Stove	2.57½	2.85½	2.55¼
10,000 "	Chestnut	2.32	2.39½	2.35
5,000 "	Pea	1.33½	1.53	2.00
100,000 tons	Average	2.35¼	2.56	2.37

The first conclusion suggested by these figures is, that "something *must* be done;" and the unreasoning general impression is that, that "something" must be a combination. There can be no question that if the companies continue to produce coal in large quantities the price must decline still further, and, that it is only a matter of time, until some of them fall into the hands of receivers. But during all of this competition the existing mines will be steadily robbed, and from lack of means additional ones will not be opened. At the same time the low prices will greatly stimulate new markets while enabling manufacturers to become larger consumers. These two influences will do much more to bring about that condition of affairs (an equalization of supply and demand) so much desired by the companies, than all the unnatural schemes they may try, and the results will be permanent and in the end more satisfactory. As the most prominent trouble in the coal trade is excessive competition, it does not appear to be a sound policy for the stronger companies (for certainly all are not upon the same level) to enter into a combination, for this would only give new life to further competition. In the case of individual operators when the price of coal is so low that the losses would be greater in working than stopping, the collieries are shut down, but with the large companies there is an inclination to continue operations until through an exhaustion of credit and funds they will be compelled to follow the same course. If this policy be pursued it cannot be long until the production will be materially decreased, and some of the companies once disorganized, it will be difficult to secure the necessary capital to bring them into active competition before the demand warrants it.

There can be no question that this would be the manner in which the coal trade would arrive at its normal condition, were it not that the capital stock of some of the companies is already endangered by depreciation, and by delay it is hoped to be able to pay to bondholders (who should be stockholders) an exhorbitant rate of interest, or what should be full dividends even in prosperous times. The actual capital that exists, in excess of bonds and guarantees, is so small in proportion to the whole, that to pay dividends is but an insignificant thing compared with paying "fixed charges."

The production of anthracite coal last week was 542,629 tons, as compared with 499,821 tons the previous week. As we did not receive reports in full for the corresponding week of last year, we are unable to make a comparison. From such reports as were received, however, it appears safe to predict that there was an increase last week.

From December 1, 1876, the beginning of the fiscal year, to December 24, 1877, the Philadelphia & Reading Railroad Company had handled 7,087,658 tons of coal, as compared wieh 5,478,280 tons for the corresponding period of 1875-6. To-day closes the present fiscal year, and with a tonnage for this week equal to that of last week, the total will reach a full seven and a quarter millions of tons.

Since the auction sale there has been a general disinclination to meet the prices realized. It is claimed that they do not represent the market; that one of the large companies agreed, previous to the sale, to sell at 5c. or 10c. per ton less than the average, and that, from this cause, numerous important buyers did not bid for more coal than they actually required. This, however, is one of those matters concerning which it is almost impossible to get reliable information. The Lehigh operators have agreed to maintain old prices, but, of course, do not do so under the circumstances. The Reading Company claims to be full of orders and not compelled to meet the market. The Delaware & Hudson Canal Company expects to issue a circular tomorrow. The Pennsylvania Coal Company has issued a circular quoting Lump, Broken, Egg, and Chestnut at $2.45, and Stove at $2.75, deliverable at Weehawken during December. These prices have been beaten by firms closely allied to other large companies. The Lehigh & Wilkes-Barre Coal Company has not yet issued its circular.

Bituminous.

The business in bituminous coal is about the same as it is usually at this season of the year when freights are high, and is almost confined to hurried attempts to complete season contracts. The heavy rains in Maryland during the past week have caused very great damage, to the railroads and Chesapeake & Ohio canal, boats, etc. It is impossible at present to learn the full extent of the damage, but it is so great that there can be no further business done over the canal this year, and it is question if it does not operate to the disadvantage of the shippers next year. The usual winter shipments will be made from Baltimore, but the business of this region is prematurely placed on a winter footing. The Clearfield region continues along in its regular course, preventing us from relating anything new or important concerning it.

New York.

Wholesale Prices of Anthracite Coal f. o. b. at the Tide Water Shipping Ports per ton of 2240lb.

	Lump.	Steamer.	Grate.	Big g.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna at Rondout	2 65	2 65	2 65	2 80	3 10	3 05
†Pittston at Newb'g (A.S Swords)	2 70	2 70	2 70	2 80	3 00	2 80
" at Weehawken	....	2 45	2 45	2 45	2 75	2 45
‡Scranton at Hoboken	....	2 31	2 25	2 28	2 32	2 28
Wyoming at Amboy (L. V. C.Co.)	....	....	2 85	2 85	3 00	2 60
Wilkesbarre at Port Johnston	2 60	2 60	2 70	2 75	3 00	2 60
Kingston at Hoboken	....	....	2 40	2 45	2 75	2 50
Lehigh Coals.						
Sugar Loaf, at Hobok. & Amb	3 50	...	2 85	2 85	3 00	2 60
Lehigh at Perth Amboy	3 50	....	2 85	2 85	3 00	2 60
Hazleton at Hoboken	3 50	....	2 85	2 85	3 00	2 60
Lehigh Coal Exchange	3 50	....	2 85	2 85	3 00	2 60
Mount Pleasant at Hoboken	3 50	....	2 85	2 85	3 00	2 60
Cross Creek at Port Johnston	....	....	2 85	2 85	3 00	2 60
Lehigh at Amboy (L. V. C. Co.)	3 50	....	2 82	2 85	3 00	2 60

* These prices are for the city and harbor of New York. For all points on North River and north of Rondout the price is 15 cents less.

† These prices are for the city and harbor of New York. For all points on North River and north of Newburg the price is 10 cents per ton less.

‡ These quotations represent the average prices of the last auction sale.

Boats towed by the D. & H. C. Co. at its expense to and from New York Harbor.

	Per ton.
Freight from Hoboken and Weehawken to New York	40c.
" " Elizabethport & Port Johnston to N. Y	40c.
" " South Amboy to New York	40c.

Freight by the boats of the companies from Hoboken, Port Johnston, Weehawken, South Amboy and Perth Amboy to New York City and vicinity 40c.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$4 70	$5 50
" " at S. Amboy.	5 00	5 50
Kanawha at Richmond	4 10	5 40
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt	4 50	5 65
Despard, West Va	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburg Orrel, Md. " "	4 50	6 00
Cannelton Cannel, West Va	....	10 00
" Splint " at Richmond.	6 00	7 00
" Gas Coal at Richmond	4 00	5 65
Peytona Cannel W. Va. at Richmond	....	10 00

Manufacturing and Steam Coals.

Cumberland at Georgetown and Alexandria, Va	2 85@3 10	4 35@4 50
Cumberland, at Baltimore	3 10@3 25	4 35@4 50
Clearfield f. o. b. Canton, Baltimore	3 25@....	4 35@4 50

Clearfield "Eureka" and "Franklin" at mines per ton 2,000 lb.....75c.; f.o.b.
Baltimore and Philadelphia per ton of 2,240 lb., $3.25; f.o.b.
South Amboy, $4.25; alongside at New York, $4.50.

Foreign Gas Coals.

	Sterling.	Am. cur'cy
Newcastle, at Newcastle-on-Tyne	8/6@10/6	5 50@ 6 00
Liverpool House Orrel, at Liverpool	25/	13 00
Ince Hall Cannel "	35/6	18 00
" Gas Cannel "	25/6	10@10 50
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S.	1 75	4 50
Caledonia, at Port Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 60	4 25
Lingan, at Lingan Bay	1 75	....
International mines at Sydney	1 75	4 50
Pictou, Vale mines, at Pictou	2 00	4 70

Retail Prices

Anthracite.

Per 2000 lbs.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, delivered	$4 50	$4 50	$4 50
Lack. coal, delivered below 59th St.	4 00	4 00	4 00
*Wilkes-Barre, delivered	4 25	4 50	4 00
*Lehigh and Locust Mountain, del'd.	4 25	4 50	4 00

* These prices are for coal delivered below Canal Street The prices for coal delivered above that point are 50c. per ton more.

Bituminous.

Delivered, per ton of 2000 lb.

Liverpool House Orrel.	$18 00	American Orrel	$11 00
Liverpool House Cannel	18 00	Red Bank Cannel	7 00
American "	11 00	Cumberland	9 00
Cannelt'n Block, or splint	10 00		

Baltimore. Nov. 29, 1877.

Specially reported by Messrs. E. STABLER JR., & Co.

Wholesale Prices per ton of 2,240 lb.

Hard White Ash.

AFLOAT BY CARGO.

Lump and Steamboat	$3 20	Stove	$3 45
Broken	3 25	Chestnut	3 10
Egg	3 35		

In cars in dealers' yards or on switch, 15c. per ton additional

Lykens Valley Red Ash.

AFLOAT BY CARGO.		BY RAIL IN CARS.	
Broken	$3 58	Broken	$3 80
Egg	3 58	Egg	3 80
Stove	3 58	Stove	3 80
Chestnut	3 28	Chestnut	3 40

From wharf or yard to the trade, 65c. per ton additional.

Boston. Nov. 24, 1877.

Coal is steady, and prices are generally unchanged. There is considerable interest at Lawrence, and in fact all along the Merrimac River, in the successful coal competion of Mr. Boynton against the Boston and Maine Railroad Company. He has a fleet of barge running from Newburyport to Lawrence, which takes 400 @500 tons each trip, and has already transported 1,500 tons, the coal selling in Lawrence at 50 cents per ton less than that delivered by the Boston and Maine. H calls his company the Pentucket Navigation Company.

The amount of coal stored by the company will depend upon how long the river remains clear of ice, but probably not more than two or three more trips can be made by the coal fleet. Mr. Boynton will construct a steamer this winter, making four steamers in his fleet, and will also construct eighteen new coal barges, making twenty-four barges in all. Next summer we may expect lively times on the river. It is rumored that the Boston and Maine will try to buy up the company.

We quote Boston wholesale prices as follows:

Anthracite, broken	$4 25@4 40	Cannel, English	$16 00
do. egg	4 25@4 40	do. Buckeye	10 00
do. stove	4 50	Lingan	4 50
Cumberland	4 80@5 00	Pictou	4 75
Clearfield	4 55@4 75	Penn	6 40
Westmoreland	6 40	Youghiogheny	6 40
Caledonia	4 25		

—*Commercial Bulletin.*

Buffalo, N. Y. Nov. 28, 1877.

Specially reported by C. M. UNDERHILL.

The following are the prices of Lackawanna, Scranton, Henry Clay and Black Diamond coals, per ton of 2,000 lb. for Buffalo local trade for the present.

	To Dealers.			To Consume
	F. O. B.	On car or boat.	In yard, screened,	Delivered at Retail.
Grate	$4 45	$3 95	$4 15	$5 20
Egg	4 45	3 95	4 15	5 20
Stove	4 70	4 90	4 40	5 45
Chestnut	4 60	4 10	4 30	5 35
Blossburg	4 00	3 85	4 35	5 00

Specially reported by LEE & LOOMIS.

Per ton of 2,000 lb. delivered on cars.

	Lump.	Run of Mine.	Nut.	Slack
Connellsville Coke	$5 00	....	.....	....
Brookfield Coal	3 55	....	.....	....
Brier Hill	3 55	....	.....	....
" 2d quality	3 30	....	.....	....
Youghiogheny	4 00	....	.....	....
Monterey	....	2 85	.....	2 00
Catfish	....	2 85	.....	2 00
Stoneboro'	....	....	2 75	2 00
Sterling Cannel	5 00	....	.....	....

Chicago, Ill. Nov. 27, 1877.

Specially reported by Messrs. RENO & LITTLE.

Retail prices of coal delivered per ton of 2,000 lb.

Lackawanna Stove	$6 75	Erie and Brier Hill	$5 50
" Chestnut	6 75	Wilmington and Ill.	3 50@4 00
" Grate	6 75	Blossburgh	6 50
" Egg	6 50	Piedmont	7 50

Cincinnati, O. Nov. 29, 1877.

Specially reported by the Consolidated Coal and Mining Co.

	AFLOAT. Per bush. of 72 lb.	per ton 2,000 lb.	DELIVERED. Per bush. of 72 lb.	per ton 2 000 lb.
Youghiogheny lump	10c.	$2 78	12c.	....
" nut	8c.	2 22	10c.	....
" slack	4½c.	1 25	8c.	....
Camden, W. Va.	7c.	1 94	11c.	...
Peytona Cannel	13c.	3 71	18c.	....
Connellsville coke	....	3 60	10c.	....
Youghiogheny coke	5c.	2 64	8c.	...

Anthracite per ton of 2,000 lb.

	Wholesale.	Retail.
Wilkes-Barre and Lackawanna (all sizes)	$5 50	7 00
Lehigh	6 50	7 50

Cleveland, O. Nov. 27, 1877.

Specially reported by F. A. BATES, Esq.

Per ton of 2000 lbs. f. o. b. vessels.

WHOLESALE.

Brier Hill (Church Hill)	3 30
" " No. 2 Grades	3 10
Straitsville Lower Vein	2 75
Hocking Valley	2 75
Massillon [No. 2 grades 15 cents less)	2 75
Tuscarawas Valley	2 30
Columbiana	2 30
Nut coal, various grades	1 90@2 20
Screenings, " "	1 35@1 75
Youghiogheny gas coals	3 75

RETAIL TRADE.

	1 to 10 tons.	10 tons. upw'd.
Brier Hill lump	$4 00	$3 75
Massillon and Mineral Ridge lump	3 75	3 50
" " nut	3 50	3 25
Straitsville Lower Vein, and Hocking lump	3 60	3 35
" " " " nut	3 40	3 15
Rich Hill lump	3 50	3 35
" " nut	3 25	3 00
Columbiana, lump	3 00	2 75
" nut	2 50	2 35
Lacka'a., Wilkesbarre and Pittston egg and grate,	6 10	5 85
" " " stove	6 25	6 00
" " " chestnut	6 25	6 00

Lehigh $1 00 per ton higher.
All sales to be strictly cash with order or C. O. D.

Hamilton, Ont. Nov. 29, 1877.

Specially reported by H. BARNARD.

Retail Prices, Delivered per ton of 2,000 lb.

Scr. or Wilkes-B. Grate	$5 00	Lehigh Lump	$6 00
" " Egg	5 00	Brier Hill	5 50
" " Stove	5 25	Massillon	4 50
" " Nut	5 25	Smithing	5 50

Indianapolis, Ind. Nov. 28, 1877.

Specially reported by Messrs. COBB & BRANHAM.

WHOLESALE BITUMINOUS.

On board cars, per ton of 2,000 lb.

White River	$ 2 65	Hocking Valley	$4 25
Brazil Block	2 60	Raymond City	4 60
Highland, grate	2 25	Youghiogheny	4 60
Indiana Cannel	4 60	Blossburg (smithing)	6 10
Peytona	5 75	Piedmont "	6 10

Per car, 12 tons.

Block coal, nut	$18 00	Block Slack	$17 00
Highland "	18 00		

RETAIL, BITUMINOUS.

Delivered per bushel of 70 lb.

White River	13c.	Block Nut, steam use	8c.
Brazil Block	13	" Slack, "	7
Highland Grate	11	Virginia Cannel	25
Block Nut, domestic use	11	Youghiogheny	18
Highland Nut, " "	11	Blossburg	26
" " steam	8		

GAS COKE.

Per bushel, measure containing 2,888 cubic inches.

Retail, crushed	14c	Wholesale	9c
" Lump	12c		

ANTHRACITE.

Per ton of 2,000.

Wholesale on cars		Retail delivered.	
Wilkes-Barre, all sizes	$5 75	Wilkes-Barre, all sizes	$7 00
Lackawanna, "	6 25	Lackawanna, "	7 00
Lehigh, "	6 75	Lehigh, "	7 50

Louisville, Ky. Nov. 26, 1877.

Specially reported by Messrs. BYRNES & SPEED.

Wholesale per bushel of 72 lb.

Pittsburg	8c.	Raymond City	7½c.
Ashland (Ky.)	7	Kentucky, on cars	8

Retail.

Pittsburg	$3 00	Anthracite, per ton	7 50
Raymond City	2 75	City Made Coke per bush	7c.
Ashland, Ky	2 50	Solt Coke per bushel	7c.
Pittsburg nut	2 50		

Milwaukee, Wis. Nov. 24, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2,000 lb.

Anthracite, egg, chestnut, and stove			$6 50
Lehigh lump	$7 00	Connellsville coke on RR. track	$7 25
Briar Hill	$5 25	Straitsville	4 80

Montreal. Nov 29, 1877.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Wholesale per 2,240 lb.

Scotch Steam	$4 00	Cape Breton Steam	$3 25
Pictou	3 75	Newcastle Smith's	5 00

Anthracite at retail, per 2,000 lb. delivered.

New Orleans, La. Nov. 22, 1877.

Specially reported by Messrs. C. A. MILTENBERGER & Co.

PITTSBURG COAL.

At wholesale (by boat load)	50c.	per bbl. of	180 lb.
To steamboats	55c.	"	"
" manufactories	60c.	"	"
" families	75c.	"	"
In hhds. (for shipment)	$7 00	per hhd. from 5	6 bbls.

ANTHRACITE COAL.

Per ton of 2,000 lb.

At wholesale	$7 00 to 8 00
" retail	10 00 to 11 00

VIRGINIA CANNEL COAL.

At retail	$1 25	per bbl. of	180 lb

ST. BERNARD (KY.) COAL.

To steamboats	50c.	"	"
" families	70c.	"	"

Pittston, Pa. Nov. 26, 1877.

Pennsylvania Coal Company's Coal in yard, ton of 2000 lb.

Retail.

Lump, Egg and Stove	$2 25
Chestnut	2 00
Pea	1 00

Delivered, fifty cents per ton additional

Richmond, Va. Nov. 29, 1877.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2,240 lb., f. o. b.

Kanawha Cannel	$9 00	New River Bituminous	$3 70
Coalburg Splint	5 70	Clover Hill Coal	3 00
Lewiston "	5 70	Norwood Gas & Steam Coal	7 70
Kanawha Gas Coal	4 90		

Sandusky, O. Nov. 26, 1877.

Specially reported by C. E. BLACK, Agt. Con. Coal & Mg. Co

We quote coal on cars at Sandusky, as follows:

Per ton of 2,000 lbs.

Anthracite.

	Grate.	Egg.	Stove.	Chestnut
Lehigh	$6 50	$6 50	$6 50	$6 50
Wilkes-Barre	5 75	5 75	5 75	5 75
Lackawanna	5 75	5 75	5 75	5 75

Bituminous.

Massillon	$3 00	Straitsville	$2 70
Del Carbo	2 75	Shawnee	2 70
Hocking Valley	2 70	Blossburg	4 75

Prices retailed delivered 50c.@75c. above car prices.

St. Louis, Mo. Nov. 28, 1877.

Reported by JAS. J. SYLVESTER, Secretary of the Anthracite Coal Association.

Retail prices, delivered. Ton of 2,000 lb.

ANTHRACITE.			per ton.
Lackawanna	$8 00@8 50	Schuylkill	8 00@ 8 50
Wilkes-Barre	8 00@8 50	Lehigh	9 00@ 9 50

BITUMINOUS.

Blossburg	9 00	Big Muddy	3 00
Pittsburg	4 50	Illinois Coals	2 50@3 00
Indiana Block	4 00	Connellsville Coke	6 50

Toledo, Ohio. Nov. 29, 1877.

Specially reported by Messrs. GOSLINE & BARBOUR.

We report prices of coal on cars at Toledo as follows:

Ton of 2,000 lb.

Straitsville lump	$2 70	Hocking Valley nut	2 30
" nut	2 30	Massillon lump	3 00
Shawnee lump	2 70	Cumberland	5 40
" nut	2 30	Blossburg	5 40
Hocking Valley lump	2 70		

Prices of hard coal on cars at Toledo are as follows:

Ton of 2,000 lb.

	Grate.	Egg.	Chestnut	Stove.
Pittston	$5 55	$5 55	$5 70	$5 80
Wilkes-Barre	5 55	5 55	5 70	5 80
Lackawanna	5 55	5 55	5 70	5 80
Lehigh	6 15	6 15	6 30	6 40

For retail delivery in city the prices are as follows: Stove and chestnut $6.45; grate and egg, $6.20 per ton; Lehigh, 60c. per ton additional.

Prices soft coal f. o. b. vessel for Lake shipments will be from 15 to 20c. per ton more than prices on cars.

Lake Freights on Coal.

Representing the latest actual charters to Nov. 21.

From Buffalo to Chicago	0.90
" " " Milwaukee	1.00
" " " Sandusky	0.40
From Cleveland to Chicago	1.00
" " " Marquette, Mich	1.25
" " " Milwaukee	1 00
" Oswego, N.Y., to Chicago	1.50
" " to Toledo	0.60
" " to Toronto, Can	0.30
" Black River to Chicago	1.00
From Sandusky to Milwaukee	1.12½
" Erie to Chicago	1.00

Freights on Bituminous Coals from the Mines to Tide Water Shipping Ports.

For the above rates we refer to our issue of Nov. 17.

For freights on *Lehigh and Wyoming Coal* we refer to our issue of Sept. 15.

For freights on *Schuylkill Coals* we refer to our issue of Nov. 17.

Freights

Per ton of 2240 lb.

Representing the latest actual charters to Nov. 28, 1877.

PORTS.	From Philadelphia.	From Baltimore	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me.	. ..	....	....	2 25
Albany	....	....	....	....
Alexandria, Va	7½	....	....	....
Brooklyn, N.Y.	....	....	....	....
Bangor, Me.	....	....	....	1 60
Bath, Me.	....	1 90	. ..	1 50
Baltimore	55@80	....	....	....
Boston, Mass.	100@175	1 90	....	1 50
Bridgeport, Ct	....	1 50	....	70
Bristol, R. I.	1 35	....	....	90
Beverly, Mass.	....	.. ..	....	1 50
Cambridge, Mass.	....	.. ..	....	1 50
Charleston, S.C.	1 10	....	....	....
Danversport, Mass.	....	....	....	....
East Cambridge, Mass	....	....	....	....
Fredericksburg, Va.	....	....	....	....
Fall River	1 35	1 50	....	90
Gloucester	1 75	....	....	....
Georgetown, D.C	....	....	....	..
Hartford, Conn.	....	....	....	....
Hoboken	....	....	....	40
Hudson, N.Y.	....	....	....	....
Jersey City	....	....	....	40
Lynn, Mass	1 90	....	....	....
Medford, Mass.	2 00	.. .	....	....
Middletown	....	....	....	90
Milton Mass	....	....	....	..
Nantucket, Mass.	....	....	....	90
New Bedford	1 40	1 60	....	90
Newburyport	....	2 15	....	1 75
New Haven	....	1 50	...	70
New London	....	1 50	....	70
Newport	....	.	....	90
New York	75	1 40	....	40
Newark, N J.	....	....	....	....
Norfolk, Va.	70	....	..	....
Norwich	1 15	....	.	90
Pawtucket	....	.. ..	....	1 00
Philadelphia	...	....	....	...
Portland	155@175	1 90	....	1 50
Portsmouth, N. H.	1 80	2 15	....	1 65
Providence	1 30	1 50	.. .	90
Rockland, Mass.	....	....	...	...
Rockport	....	....	....	....
Richmond, Va.	75@80	....	....	....
Saco	....	....	....	1 75
Salem, Mass.	....	2 00	....	1 50
Saybrook, Mass.	....	....	....	....
Savannah, Ga.	....	....	....	....
Somerset, Mass.	1 30	....	....	90
Troy	....	....	....	....
Thomastown, Me.	....	....	....	....
Washington	70@75	....	....	. .
Wilmington, N.C.	....	....	..	. ..
West Farms, N.Y.	....	....	....	...

* And discharging and towing. † And discharging. ‡ And towing. § 8c per bridge extra.

Freights on Bituminous Coal and Coke over the Chesapeake and Ohio Railroad.

To	From New River District, say, at Quinnemont. Bituminous Coal and Coke. Distances.†	Regular Rate.	Special Rate.
	Miles.		
Charleston	75	1 00	70
Huntington	127	1 20	90
Staunton	158	2 30	2 00
Charlottesville	197	2 80	2 50
Gordonsville	218	3 00	2 70
Hanover Junction	276	3 25	3 10
Richmond	294	3 25	3 10
Richmond *via* Hanover Junction	....	3 50	3 35
James River	297	3 25	3 10

To	From Kanawha District, say, at Blacksburg. Bit. Coal and Coke. Regular Rate.	Special Rate.	Cannel Coal. Regular Rate.	Special Rate.
Charleston	80	50	1 20	1 00
Huntington	1 00	70	1 50	1 20
Staunton	3 00	2 50	4 00	3 50
Charlottesville	3 30	2 80	4 25	3 70
Gordonsville	3 35	2 90	4 40	3 90
Hanover Junc	7 75	3 45	4 50	4 50
Richmond	4 00	3 70	4 50	4 50
Richmond *via* Hanover Junction	4 25	3 95	4 75	4 75
James River	4 50	4 50	5 00	5 00

A Terminal charge of ten cents per ton, in addition to rates above, will be collected on all coal and coke at James River. Also, at Huntington, a charge of five cents per ton for transferring by tipple, or ten cents per ton for transfer from car to barge on the river track.

Local Tariff No. 8 will govern rates to all stations, excepting as modified by this special tariff, but the rate to any station between the stations above designated shall in no case exceed the rates named herein to the first point beyond it, of the stations above named.

Special Rates.—The rates given above in columns headed "Special Rates," will apply on all shipments of coal or coke mined or made on the line of this road, destined for use in steam or manufacturing purposes; also on all shipments destined for any point off the line of the Chesapeake & Ohio Railroad.

Agents, when they cannot be certain that shipments are destined for use in steam or manufacturing purposes, will collect freight at regular rates as above, and overcharges, if any occur, will be promptly refunded through the General Freight Office.

A Charge of twenty-five cents per ton, in addition to all rates above given, will be made for delivery of coal or coke at points *between stations* requiring the use of an engine.

A Special Coal and Coke Tariff No. 1 dated February 1, 1876, and special coal and coke tariff No. 2, dated November 1, 1876, are superseded by this Tariff.

†These distances are computed from Quinnemont (or the New River District.) Blacksburg (or the Kanawha District) lies 56 miles west of Quinnemont, which distance will be added to all coal going east of the New River District and deducted from Huntington and Charleston, which lie west of the same.

NOTE.—Sales of Coal are made by the Chesapeake & Ohio Railroad Coal Agency at New York on a basis of pro-rating proceeds between the Railroad and the mines, irrespective of fixed rates of freight.

Towing.

Rates of Towing from New York to places on the *Hudson River*

Boats of 200 tons capacity and upwards.

Per ton of 2,240 lb.

	cts.		cts
Manhattanville	7	Verplanck's Point and Haverstraw	15
Yonkers & Spuyten Duyvel.	8	West Point & Cold Spring.	16
Piermont	11	Newburg	17
Nyack, Tarrytown & Sing Sing	14	Poughkeepsie	18
Peekskill, Croton Landing,		Rondout	20

Rates for boats of 100 tons per boat are as follows:

	$		$
Manhattanville	10	Sing Sing and Peekskill	20
Yonkers	15	Newburgh	25
Tarrytown	18	Poughkeepsie	30

Special Rates will be made for Saugerties and Catskill.

East River and Sound Ports, from the foot of Twenty-third Street to the following points, *and return*, per ton of 2,240 lb.

	cts.		cts.
New Haven and Bridgeport	17	New London	32
South Norwalk	20	Middletown	46
Southport, Milford and Westport	25	Norwich, Stonington and Mystic	38
Branford and Saybrook	30	Hartford	52

Derby 17 cts. per ton and $50 per boat extra.

Rates to the following places and *return* per boat:

	$		$
61st Street, E. R.	8	Westchester & Flushing	25
79th " "	9	Little Rock, Pt. Washington,	
93d " " and Astoria.	10	N. Rochelle & Glen Cove.	40
Harlem and Mott Haven	14	East Chester (Town Dock.	50
West Farms (mouth of creek)	20	Roslyn, Mamaroneck, Port Chester and Stamford	50
College Pt. & Whitestone	23	Darien	60

Boats carrying less than 210 tons will be charged the same as if carrying that quantity. Boats for New Haven will be landed at Bell Dock, or Canal Dock only; all towage to Derby Dock, and to yards, to be paid by consignees. Boats for Bridgeport will be landed at Naugatuc R. R Dock or Housatonic R. R. Dock only. All towage to yards to be paid by consignees.

Rates via the Hudson River are furnished to us by A. B. VALENTINE, No. 41 Jay street. Rates via the East River are furnished by the Eastern Transportation Line.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Nov. 30, 1877.

American Pig.—The business in the iron market has received quite a check, and those companies which showed an inclination to advance prices seem to be more anxious to sell at old rates. A few hundred tons of Nos. 1 and 2 foundry iron have been sold on private terms, but known to be at a concession. We quote No. 1 foundry, at $18 @ $20; No. 2 foundry, $18 @ $19 and forge, $16 @ $17.

Scotch Pig.—This article is rather weak in price and business confined to retail sales. We continue, however, to quote, Glengarnock, $24.25; Coltings, $25.75 @ $26,50; Eglinton, $24.

Rails.—We learn of no sales although there will probably be some reported before our next. We quote steel at mills at $40 @ $43 and iron at $33 @ 37.

Old Rails.—These continue as quiet as for several weeks back. The nominal quotation is $18 @ $18.50.

Wrought Scrap.—Without business we quote at $22.

Baltimore, Md. Nov. 26, 1877

Specially reported by Messrs. R. C. HOFFMAN & Co.

The iron market remains very quiet and depressed, with very little demand and no change in prices. We quote:

Baltimore Charcoal	$29@30	Mottled and White	$15@16 00
Virginia Charcoal	28@30	Charcoal C. B. Blooms	50@55 00
Anthracite No. 1	19@20	" " Billetts.	55@60 00
" " 2	18@19	Refined Blooms	45@50 00
Anthracite No. 3	17@18		

Boston. Nov. 24, 1877.

Pig is hardly so active as a few weeks ago, but prices are quite firmly maintained. We quote $21.50 for No. 1; $20@20.50 for No. 2, and $19.50@$20 for gray forge, Scotch pig is dull, with very light demand. Most of the imports now coming had been sold previous to arrival. The foreign markets continue weak, the demand for the Indian State Railways, though no doubt a help in staying any further immediate fall in prices, being but a drop in the ocean to the enormous productive power of steel and iron.

Bar continues unchanged, quoting $43@45 for refined, and $35@36 for common. American rails, $35@$38. Nails are in light demand at unchanged prices. Sheet is selling at 3@3¼c. per pound. Russia is quiet at 10¾@11c. We quote, English spring steel at 7@8c. gold; 9@11c. for German; 9@11c. for machinery; 14c @15c. for cast; 10@12c. for blister; 8c. for American spring; 13¼@14c. for cast, 9c. for blister, and 8c. for machinery.—*Commercial Bulletin.*

Buffalo. Nov. 29, 1877.

Specially reported by PALEN & BURNS.

No. 1 Ex Foundry	$20 91
No. 2 "	19 91
Gray forge	18 91
American Scotch A 1 Foundry	24 25
Cherry Valley B 1 "	23 25
" " No. 2 "	22 25

Per gross ton 4 months delivery here.

Chattanooga, Tenn., Nov. 27, 1877.

Specially reported by J. F. JAMES, dealer in pig iron, ores, etc

PIG IRON.—The market here remains dull and unchanged. Sales are almost as scarce as money with the few furnaces in operation. Foundrymen South and Southwest complain of a great falling off in their trade, and do not look for any improvement until next spring.

SCRAP IRON.—In full supply at low prices.

BAR IRON.—The mills here report plenty of orders to keep them running until February or March next.

OLD RAILS.—Scarce. The small lots in the market are held at prices unobtainable. I was compelled to decline an offer to-day for 2,000 tons for a nail mill West.

Tenn., Ala. and Ga. Charcoal, No. 1 Foundry	$18 00@19 00		
Tenn., Ala. and Ga. Charcoal, No. 2 Foundry	17 00@18 00		
Tenn., Ala and Ga. Charcoal, Gray Forge	15 00@16 00		
Tenn., Ala. and Ga. Coke, No. 1 Foundry	19 00@20 00		
Tenn., Ala. and Ga. Coke, No. 2 Foundry	17 00@18 00		
Tenn., Ala. and Ga. Coke, Gray Forge	15 00@16 00		
Charcoal or Coke, white and mottled	14 00@15 00		
Tenn., Ala. and Ga. Cold Blast (car wheel)	22 00@28 00		
Old rails	18 00@19 00	Wrought scrap, No. 2	12 00
Old car wheels	16 00@17 00	Cast scrap	10 00
Wrought scrap, No. 1	17 00	Muck bar	32 00@33 00

Iron Ores.

Red Hematite (about 55 per cent. metallic iron) f. o. c. at mines	1 25
Brown Hematite (about 55 per cent. metallic iron)	1 75

Cleveland, O. Nov. 23, 1877.

Specially reported by Messrs. C. E. BINGHAM & Co.

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1, L. S. Charcoal	$25 00	Am. S., No. 1, Ch Val.	$24 00
No. 2, " " "	25 00	" " B. 1, " "	23 00
No. 1, Anthracite	23 00	" " No. 2, " "	22 00
No. 2, "	21 00	No. 1, Massillon	24 00
No. 1, Bituminous	23 00	B—1, "	23 00
No. 2, "	21 00	No. 2, "	22 00

CAR WHEEL AND MALLEABLE IRON.

No. 3 L. S. Charcoal	26 00	No. 5 & 6, L. S. Charcoal	$27 00
No. 4, " " "	26 00		

BESSEMER IRON.

Nos. 1 & 2, L. S. Char.	$25 00		

FORGE IRON.

No. 1, Gray	$20 00	White and Mottled	$19 00

Cincinnati, O. Nov. 27, 1877.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

The situation of the iron market presents no noticeable change, and we continue to quote as follows:

CHARCOAL.

Hanging Rock No. 1 Foundry and B 1	$23 00@23 50	—4 mos
" No. 2 "	22 00@	—4 mos
" Soft Silver Gray	21 00@22 00	—4 mos
" Mill	18 00@20 00	—4 mos
Tennessee, No. 1 Foundry	22 00@	—4 mos
" " 2 "	21 00@	—4 mos
" Mill,	18 00@19 00	—4 mos

STONE COAL.

Ohio, No. 1 Foundry	20 00@20 50	—4 mos
" " 2 "	19 00@19 50	—4 mos
" " 3 "	18 00@18 50	—4 mos
" Mill	18 00@18 50	—4 mos

COKE.

Ohio & W. Va. No. 1 Foundry	22 00@	—4 mos
" " " 2 "	21 00@	—4 mos
" " Mill	18 00@19 00	—4 mos

CAR-WHEEL.

Hanging Rock, C. B.	Hecla, Vesuvius, Jefferson, Etna.	40 00@ —4 mos
Maryland,	Amherst & Cedar Pt.	37 00@ —4 mos
Missouri,	Maramec	32 00@ —4 mos
Alabama,	Woodstock	32 00@ —4 mos

BLOOMS.

Charcoal	45 00@50 00	—cash.

SCRAP IRON.

Cast	40c.@ 45c.	— "
Wrought	62½c.@ 1 00	— "

Columbus, O. Nov. 28, 1877.

Specially reported by KING, GILBERT & WARNER, dealers in Pig Iron and Ores.

There has been a fair demand for Pig Iron the past week, but owing to an increased production no change for the better in prices. The usual time, four months, allowed on quotation.

FOUNDRY IRONS.

No. 1 Hanging Rock Charcoal	$24 to 25
No. 2 " " "	22 to 23
No. 1 Hocking Valley soft and strong from pure limestone ores	22 to 23
No. 2 Hocking Valley soft and strong from pure limestone ores	21 to 22
No. 3 Hocking Valley soft and strong from pure limestone ores	20 to 21
No. 1 American Scotch	21 to 22
No. 2 " "	19 to 20
Silver Gray	18 to 19

MILL IRONS.

Gray neutral	19 to 19 50
Mottled and white neutral	18 to 18 50
Gray cold short	18 to 18 50
Mottled and white cold short	17 to 17 50

Louisville, Ky. Nov. 27, 1877.

Specially reported by Messrs. GEORGE H. HULL & Co.

We have no change of importance to report. Business rather quiet. Demand mostly for mill irons. The usual time, four months, allowed on quotations below :

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$23 00@24 00
No. 2 " " "	20 00@21 00
No. 1 Southern Charcoal	20 00@21 00
No. 2 " "	19 00@20 00
No. 1 Hanging Rock, Stonecoal and Coke	20 00@22 00
No. 2 " " " " " "	19 00@20 00
No. 1 Southern Stonecoal and Coke	19 00@20 00
No. 2 " " " " "	18 00@19 00
" American Scotch"	20 00@22 00
Silver Gray	18 00@19 00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neutral	18 50@19 50
No. 1 Stonecoal and Coke, Cold-short and Neutral	18 00@18 50
No. 2 " " " " " "	17 50@18 00
No. 1 Missouri and Indiana Red-short	21 00@22 00
White and Mottled, Cold-short and Neutral	15 00@16 00

CAR-WHEEL AND MALLEABLE IRON.

Hanging Rock, and Cold Blast	34 00@38 00
Alabama and Georgia "	2c 00@33 00
Kentucky Cold-blast	25 00@33 00

Milwaukee, Wis. Nov. 24, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Wholesale Price.

Charcoal Iron.

No. 1 Lake Superior per gross ton	$23 00—4 mos.
No. 2 " " "	22 00—4 mos.

Anthracite Iron.

No. 1 anthracite per gross ton	$24 00—4 mos.
No. 2 " " "	23 00—4 mos.

Stone Coal & Coke.

Wholesale Price.

Warner's Am. Se'th (Bk. Band) per ton	$25 00@ —4 mos.
Soft Silvery per ton	22 00@23 00—4 mos.
Ohio stone coal	22 00@23 00—4 mos.

Car Wheel.

Lake Superior ores per ton	$25 00@27 00—4 mos

Pittsburgh, Pa. Nov. 27, 1877.

Specially reported by A. H. CHILDS

There is a fair demand for good brands of pig iron, but rather less activity than existed a few weeks since. Prices are, on the whole, well maintained and without quotable change.

	4 mos.		4 mos.
No. 1 F'dry	$21 00@22 00	Mottled&White	$16 50@18 00
" 2 "	20 00@21 00	Hot blast C'coal	21 00@25 00
Gray Forge	18 00@20 50	Cold " Western	38 00@40 00

Richmond, Va. Nov. 28, 1877.

Specially reported by ASA SNYDER, Esq.

The destruction of the rail and water lines communicating with this city, together with the submerging of five or six of our foundries by the recent great floods, have entirely suspended business. The iron market, however, gives no indication of change in price.

Virginia Cold Blast Charcoal Pig Iron, cold short	$20 to $26
" " " " " " neutral	28 to 31
" Warm " " " "	20 to 25
" Anthracite 1 X	20 to 22
" " 2 X	19 to 21
" " 2	18 to 19
" " Coke West Va. 1 X	22 to 23
X 2	21 to 2[illegible]

St. Louis, Mo. Nov. 27, 1877.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

Our market is about as usual. Business is fair and demand very good. Prices are low and prospects are not specially encouraging for any advance at present. The stocks of pig iron are gradually getting less here, and very few furnaces running.

COLD BLAST CHARCOAL—ALL NUMBERS.

Hanging Rock	25@38	Assorted Bar Iron	$2, rates.
Tennessee	26@30	No. 1 Wrought Scrap	80c. cwt.
Kentucky	26@30	Heavy cast	65 "
Missouri	26@30	Light "	55 "
Georgia	26@30	Old rails	19 00 to 20 00
Alabama	26@30	Old car wheels	17 00 to 18 00

	No. 1.	No. 2.	Mill.	White and Mottl'd.
Missouri stone coal	$22 00	$21 00	$20 00	19 00
" charcoal	22 00	21 00	20 00	20 00
Tennessee charcoal	22 50	21 00	20 00	19 00
Tenn. coke very soft and strong	23 00	21 00	20 00	18 50
Hanging Rock charcoal	25 00	24 00	23 00	.....
" " cold short	24 00	23 00	.....	.....
	Ex No. 1	No. 1.	B No. 1.	No. 2.
Alice Hanging Rock coke	$25 00	$24 50	$24 00	$22 50
Quinnimount, W. Va., coke	23 50	23 00	22 00	21 00

METALS.

NEW YORK, FRIDAY EVENING, Nov. 30, 1877.

The business of the week has been very quiet, and so far as spot operations are concerned, appears to have settled down to the usual quietness of December and January.

Gold Coin.—During the week under review the price of gold has ranged from 103 to 102¾, and closed at 102⅞

Bullion.—The silver market abroad has continued weak, with very little doing, and has fallen to 54d. in London, and 117 here, since the announcement that the India Council was about to resume the sale of their bills on India. It seems also to be generally accepted abroad that the German Government has yet to sell nearly $100,000,000 of silver. If this should be put on the market beyond the India demand to absorb it, it would certainly lower silver there and here, no matter what our legislation on the subject may be; but if it is to be sold slowly, only as the market will take it for India, and we should, as it is likely we shall, consume our own product, we may look for a firm and somewhat higher market for silver. San Francisco quotes silver at 10 per cent. discount. Gold is quoted at par, to ⅛ per cent. premium.

Daily Range of Silver in London and New York per oz

Date.	London. Pence	New York. Cents	Date.	London. Pence	New York. Cents
Nov. 24	54⅜	117½	Nov 28	54	117
" 26	54⅜	117½	" 29	....	....
" 27	54⅜	117¼	" 30	54	117

STATEMENT OF BUSINESS AT THE UNITED STATES ASSAY OFFICE AT NEW YORK, FOR THE MONTH ENDING NOVEMBER 30, 1877.

Deposits of Gold—

Foreign Coin	200,000 00
Foreign Bullion	550,000 00
United States Bullion	924,000 00
" " " (re-deposits)	50,000 00
Jeweler's Bars	56,000 00
	$1,780,000 00

Deposits of Silver—

Jeweler's Bars	$ 8,000 00
Foreign Bullion	12,000 00
United States Bullion (contained in gold)	10,000 00
United States Bullion (re-deposits)	8,000 00
" " " Colorado	400 000 00
" " " Lake Superior	800 00
" " " Montana	26,200 00
" " " Nevada	225,000 00
" " " New Mexico	18,000 00
" " " Utah	200,000 00
	908,000 00
Total Deposits	$2,688,000 00
Gold bars stamped	$717,111 57
Silver "	595,686 13
	$1,312,797 70
Transmitted to Mint of the United States at Philadelphia, for coinage, silver	60,611 54

BULLION SHIPMENTS.

We give below a statement showing the amount of the latest bullion shipments in addition to that announced in our issue of November 24:

Nov. 15	Martin White	Nev	$17,647
" 17	Tybo Con	"	3,834
" "	Northern Belle	"	5,100
" "	Leopard	"	3,300
" 19	Alps	"	5,794
" 20	Grand Prize	"	20,700
" 21	Geneva Cons	"	2,183
" 9	Emigrant	Cal	3,600

Gwin Mine.—The average monthly bullion yield of this mine is $25,000.

Trojan Mining Company.—This mine, which is situated in Gold Hill, Storey County, Nev., is producing ore at the rate of 55 tons per day, averaging $35 to $40 to the ton, which is equal to about $13,200 per week.

The Bullion Yield of Eureka County, Nevada, for the month of October was $915,255.73.

THE POSITION OF GERMANY ON THE SILVER SUPPLY.—It is estimated that the amount of disposable silver held by the German Government has been enlarged, and that about $112,500,000 are now regarded as likely to be supplied from Germany. London dealers have been buying in anticipation of an advance in the price, but it is not intimated on what the expectation of a rise rests; presumably, it may be due to the fact that the German Government has resolved not to sell except at a minimum which is supposed to be above the present market quotation. During the first ten months of 1877 England took from Germany $58,070,000 of silver, against $20,500,000 during the corresponding time in 1876, while she sent to that country $42,340,000 of gold. During the ten months ending October 31, England imported $36,910,000 more silver than during the corresponding time in 1876, this increased supply coming entirely from Germany. Fortunately for the price of the metal India has been a large taker, the exports thither for the period having exceeded those of 1876 by $31,680,000. These facts indicate that Germany has been disposing of her demonetized silver at a very rapid rate during late months.

Copper.—We are reported sales of about 200,000 lb. at 17⅝@17¾c. It is said that 17½c. is bid for Lake copper for export. The latest London quotations by cable are Chili bars, £64, and best selected, £71; a further decline of 10s. from our last.

Tin.—A further sale of 50 tons of tin to arrive is reported, although we were unable to learn the price. Of course, a large proportion of the business in tin to arrive, that we have reported during the past few weeks, represents resales. Straits in London is quoted to-day, by cable, £66, and at Singapore at $19.87½ per picul, with exchange at 4s. 0⅜d., and freight, £1 2s. 6d. We quote, Straits at 16¼c.; L. & F., 15¾c.@16c.; Refined, 16@16¼c.; and Banca, 18¼c.

Tin Plates.—In these a fair jobbing demand is reported. We quote, charcoal tins at $6.25: and ternes at $6@6.12½; coke tins, $5.60, and ternes $5.37½@5.50—prices in gold, per box. Messrs. Robt. Crooks & Co., of Liverpool, under date of Nov. 15, say:

"There has been a fair trade in coke tins, and in consequence parcels of full grade are not to be had now at lowest point. The large booking has stiffened some makers for all kinds, but in the majority of instances charcoal tins are as dull as ever. Ternes are in rather less demand than they were, but held for quite steady rates."

Lead.—In this article there is no business reported. We quote at 4¼c., with the market weak at that figure.

Spelter & Zinc.—Spelter is quoted at 5¼ to 6c. and rather quiet. Sheet zinc is receiving but little attention, and is quoted at 6⅜ to 6½c.

Antimony.—This article remains very quiet and unchanged in price. Cookson's is quoted at 13¼c., and Hallett's at 12¼c.

Salt Lake Ore and Metal Market.

SALT LAKE CITY, UTAH, November 30, 1877.

Argentiferous Lead (Base Bullion).—$40@42 per ton for lead; $1.17@$1.18 per ounce for silver; $20 per ounce for gold. The quotations for silver are based upon the silver contents in the lead of 80 to 120 ounces per ton of 2,000 lb.

The *Inter-Ocean's* Correspondent under date of Nov. 23d says:

"The weather is fine, and the getting in of winter supplies to the mines progressing favorably.

The ore from the leasers of the Sailor Jack mine has been replevined, and bonds given for $60,000.

The coal interests that supply Utah with coal for domestic use are all in the hands of the Union Pacific Railroad Company, but we hope they will not give us any higher prices.

Ben Morgan's furnace made eleven tons of bullion each day for Friday, Saturday, Sunday, and Monday, and is the best four-days' run ever made by a single furnace on this coast."

Statement of Ore and Bullion shipped from Salt Lake during week ending Saturday, Nov. 17, 1877.

BULLION.

Consignor. Smelting Works	Consignee.	lb.	
Morgan	St. Louis	109,881	....
Waterman	"	21,351	131,237
Mingo	Penn. S. Co.	168,490	....
Telegraph	"	230,601	....
Pascoe	"	62,246	461,332
Durell	Omaha	21,189	....
Germania	"	61,335	....
Williams	"	14,588	....
Queen	"	6,456	....
Frisco	"	41,165	144,733
Durell	Cook & Co., Chicago	42,643	42,643
			779,945

ORES.

Nabob	Omaha	42,000	....
Raymond & Ely tailings	"	42,750	84,750
Flagstaff	Hilliard	378,556	....
Carbonate	"	12,280	....
Nabob	"	63,000	569,836
			664,586

FINANCIAL.

New York Stocks.

NEW YORK, Friday Evening, November 30, 1877.

Thanksgiving Day having occurred during the week under review, the business in the coal stocks has been somewhat reduced. Prices, however, have been very firm, considering that coal has been sold at the lowest prices ever recorded, and so low that, unless a revival should take place, ruin is in store for several of the companies. The main prop to the market has been the talk of a new combination. This we treat fully in our Coal Trade Review and Editorially. We do not see any prospects of such an arrangement being entered into, nor do we believe that many of those who talk of it have any good reasons for expressing themselves as they do. The main argument is, that the companies *must* form a combination, and this appears to be accepted by many as conclusive that they will do so, without questioning how such a thing can be brought about. The manner in which the prices of these stocks are supported, under all circumstances, shows too clearly that what we have often said in these columns

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

Name and Location of Company.		Feet on Vein.	Capital Stock	Shares. No.	Shares. Par Val.	Assessments. Total levied to date.	Assessments. Date and amount per share of last. Mo.	Yr.	Amt.	Dividends. Total paid to date.	Last Dividend. Mo.	Yr.	Amt.	Rate per Ann.	Highest and Lowest Quotations per Share in Currency. Nov. 24. H.	L.	Nov. 26. H.	L.	Nov. 27. H.	L.	Nov. 28. H.	L.	Nov. 29. H.	L.	Nov. 30. H.	L.	Sales.
Coal Stocks.			$			$				$				Per cent.													
Consol. Coal	Md.	....	10,250,000	102,500	$100	*	.....	....	.....	...	Jan.	1877	2½	10	..	..	..	..	..	..	..	..	..	..	..	25	24
Del. & H. Canal	Pa.	....	20,000,000	200,000	100	*	.....	....	.....	38,821,104	Aug.	1876	4	9	47½	46⅜	48⅜	47⅜	47¾	47	48	47	..	..	47½	46¾	11,282
Del., Lac. & W. RR.	Pa.	....	26,200,000	524,000	50	*	.....	....	.....	....	July	1876	2½	5	50⅞	49⅞	51⅜	50¾	51⅛	50⅛	50¾	49⅞	..	..	51⅛	50¼	108,992
Lehigh C. & Nav.	Pa.	....	10,448,550	208,971	50	*	.....	....	.....	...	Nov.	1876	1⅜	5½	18¾	17⅞	19	18¼	18½	18	18⅜	18⅜	..	..	18⅝	18⅛	7,294
Lehigh Valley RR.	Pa.	....	27,042,900	540,858	50	*	.....	....	.....	...	Oct.	1877	1	5	40	40	41	39¾	40⅜	40½	41	40½	..	..	41	40½	1,160
Maryland Coal	Md.	....	4,400,000	44,000	100	*	.....	....	.....	....	Jan.	1876	1½	1½	..	..	..	..	..	..	..	..	..	..	..	9½	.....
N. J. Central RR.	Pa.	....	20,600,000	206,000	100	*	.....	....	.....	...	Apr.	1876	2½	2½	14¼	14¼	..	..	13¾	13¾	13½	13¼	..	..	..	..	517
Penna. Coal	Pa.	....	5,000,000	100,000	50	*	.....	....	.....	....	Aug.	1877	3	12	..	..	..	..	..	..	..	..	..	..	..	140	.....
Pennsylvania RR.	Pa.	....	68,870,200	1,377,404	50	*	.....	....	.....	.....	Nov.	1877	1½	8	32⅜	32	32½	32	32⅛	31¾	32¼	32	..	..	31⅝	31⅛	53,521
Phil. & Read. RR.	Pa.	....	34,278,175	685,563	50	*	.....	....	.....	43,012,497	Jan.	1876	*2½	10	16½	16¼	16¾	16½	16⅜	16⅛	16¼	16	..	..	16⅛	16	25,327
General Mining Stocks																											
Alpha Cons. G. S.	Nev.	300	3,000,000	30,00	100	210,000	Aug.	1877	$1 00	....	....	....	.....	..	13¾	..	13⅜	..	13⅛	..	12⅞	..	..	..	..	..	400
American	Colo.	....	1,000,000	100,000	10	*	.....	....	.....	....	.....	.....	.....	..	4¾	4½	4⅝	4¼	4⅜	..	4⅞	4⅝	..	..	4⅞	4⅝	5 600
Am. Flag, G	Colo.	5,300	600,000	50,000	10	*	.....	....	.....	....	.....	.....	.....	..	10C	..	11C	..	.....	....	11C	..	..	..	11C	..	2,700
Belcher, G. S.	Nev.	1,040	10,400,000	104,000	100	1,072,400	Sept	1877	1 00	15,397,200	Apr.	1876	$1 00	12	..	..	..	..	8¼	8⅛	..	..	..	..	7½	..	400
Bertha & Edith G.	Vir.	645 acs.	3,500,000	350,000	10	*	.....	....	.....	....	.....	.....	.....	..	8c	7c	8c	6c	6c	..	..	..	..	..	6c	..	14,100
Best and Belcher, G. S.	Nev.	545	10,080,000	100,800	100	337,792	Aug.	1877	1 00	....	.....	.....	.....	..	..	..	..	..	21¾	..	..	..	..	..	..	..	100
Bobtail, G	Colo.	2,500	1,136,630	227,326	5	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	2¼	..	..	..	2¼	2	436
Bobtail Tunnel, G	Colo.	....	100,000	20,000	5	6,000	July	1873	0 30	20,000	Dec.	1876	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Bullion, G. S.	Nev.	943½	10,000,000	100,000	100	2,702,000	Oct.	1877	1 50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Caledonia, G. S.	Nev.	2,188	10,000,000	100,000	100	1,435,000	Oct.	1877	75	....	.....	.....	.....	..	..	..	..	..	4⅜	..	4	..	..	..	4⅜	..	300
California, G. S.	Nev.	600	54,000,000	540,000	100	....	.....	....	.....	20,520,000	Nov.	1877	2 00	24	31⅞	..	..	..	30¾	..	..	..	..	..	..	..	20
Chollar Potosi, G. S.	Nev.	1,400	2,800,000	28,000	100	1,506,000	Oct.	1877	3 00	3,080,000	Feb.	1872	1 00	12	..	..	..	..	36⅜	..	..	..	..	..	..	..	100
Cleveland, G	Colo.	3,715	250,000	25,000	10	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Cons. Hercules & Roe.	Colo.	16,500	1,000,000	100,000	10	*	.....	....	.....	120,000	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Cons. Imperial, G. S.	Nev.	458	50,000,000	500,000	100	575,000	Oct.	1877	0 20	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Con. N. Slope & E. C. T.	Colo.	15,000	500,000	10,000	50	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Cons. Virginia, G. S.	Nev.	710	54,000,000	540,000	100	474,600	June	1873	3 00	34,560,000	Nov	1877	2 00	24	27¾	..	..	..	26¾	..	..	..	..	..	..	..	15
Confidence, G. S.	Nev.	130	2,496,000	24,960	100	243,840	Mar.	1873	1 00	78,000	May.	1865	8 ⅓	8⅓	5¾	..	6⅛	..	5¾	..	6⅛	..	..	..	..	..	600
Crown Point, G, S.	Nev.	600	10,000,000	100,000	100	1,573,370	Sept.	1877	1 00	11,588,000	Jan.	1875	2 00	24	..	..	..	..	..	..	..	..	..	..	..	..	....
Douglas	Colo.	21,000	1,000,000	10,000	100	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Eureka Cons. G. S. L.	Nev.	..	5,000,000	50,000	100	100,000	May	1876	1 00	1,300,000	Oct.	1877	3 00	24	..	..	..	..	3 ¼	..	..	..	..	..	3⅞	..	200
Eureka G. Mg. G	Cal'f	1,680	2,000,000	20,000	100	*	.....	....	.....	2,134,000	Aug.	1877	2 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Exchequer, G. S.	Nev.	400	10,000,000	100,000	100	280,000	Sept.	1876	1 00	....	.....	.....	.....	..	..	..	..	..	4¾	..	..	..	..	..	..	..	200
Gould and Curry, G. S.	Nev.	612	10,800,000	108,000	100	2,450,000	Aug.	1877	1 00	3,826,800	Oct.	1870	10 00	..	10⅜	..	..	..	10⅜	10⅛	..	..	..	..	..	..	400
Granville Gold	N. C.	9,000	1,000,000	100,000	10	*	.....	....	0 50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Hale & Norcross, G. S.	Nev.	400	11,200,000	112,000	100	2,634,000	Oct.	1877	1 00	1,598,000	Apr.	1871	5 00	12	..	..	9¼	..	9⅛	..	..	..	..	..	10⅛	..	300
Henry Tunnel	Nev.	3,000	2,000,000	80,000	25	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Hukill, G. S.	Colo.	3,288	1,000,000	100,000	10	*	.....	....	.....	100,000	Nov.	1877	0 10	12	..	..	4½	..	..	..	..	..	..	..	..	..	100
Julia Cons., G. S.	Nev.	3,000	11,000,000	110,000	100	440,000	Aug.	1877	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Justice, G. S.	Nev.	2,100	10,500,000	105,000	100	2,027,500	Oct.	1877	2 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Kentuck, G. S.	Nev.	95	3,000,000	30,000	100	270,000	Dec.	1874	1 00	1,252,000	Mar.	1870	5 00	..	..	..	..	..	6	..	5¾	..	..	..	5¾	..	400
Kossuth, G. S.	Nev.	2,700	5,400,000	108,000	50	421,200	Aug.	1877	0 15	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Lacrosse	Colo.	3,900	1,000,000	100,000	10	*	.....	....	.....	....	.....	.....	.....	..	22C	..	24C	21C	22C	20C	22C	20C	..	..	24C	22C	12,700
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	100,000	July	1877	50	162,500	Dec.	1876	0 50	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Lucerne Mining	Colo.	4,200	5,000,000	500,000	10	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Mariposa, preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00	....	.....	.....	.....	..	..	..	2⅞	2¾	3¼	2¾	4	3¼	..	..	5	4	3,096
" common	"	acres.	10,000,000	100,000	100	1,425,000	June	1877	1 00	....	.....	.....	.....	..	..	..	2⅝	2	3	2½	3⅝	3	..	..	3¾	3½	6,750
Memphis	Colo.	6,000	300,000	60,000	5	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Merrimac, S.	Mass.	1,500	500,000	50,000	10	*	.....	....	.....	90,000	Nov.	1877	10C	12	..	..	..	..	..	..	..	..	..	..	..	..	....
Mexican, G. S.	Nev.	600	10,080,000	100,800	100	1,141,440	Aug.	1877	0 30	....	.....	.....	.....	..	18¼	..	..	..	15¾	..	16	..	..	..	15¾	..	400
Mouse	Colo.	39,000	2,000,000	200,000	10	*	.....	....	.....	100,000	Nov.	1877	0 25	3	7⅜	7¼	7⅜	7⅜	7⅝	7¼	7¾	7¼	..	..	7¾	7⅝	14,750
N. Y. & Colo., G	Colo.	..	1,000,000	50,000	20	*	.....	....	.....	20,000	Mar.	1877	0 20	..	2½	2⅜	2½	2⅜	2½	2⅜	2¾	2¼	..	..	2¾	..	1,910
Northern Belle, S.	Nev.	1,600	5,000,000	50,000	100	....	.....	....	.....	1,400,000	Oct.	1877	1 00	..	..	..	14	..	..	..	..	..	..	..	14¾	..	50
Ontario	Utah	3,000	10,000,000	100,000	100	....	.....	....	.....	700,000	Nov.	1877	1 50	6	24	23¾	24⅝	24	24⅛	24	24¼	24⅛	..	..	25¼	24⅜	2,175
Ophir, G. S.	Nev.	675	10,080,000	100,800	100	2,934,400	May.	1875	2 00	1,394,400	Mar.	1864	4 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Original Comstock, G. S	Nev.	..	10,000,000	10,000	100	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Overman, G. S.	Nev.	1,200	3,840,000	38,400	100	2,567,880	Nov.	1877	3 00	....	.....	.....	.....	..	23½	..	..	..	23¾	..	..	..	..	..	23½	..	300
Pleasant View, G	Colo	1,200	200,000	20,000	10	*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Quicksil. preferred	Cal.	8,500	4,291,300			*	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
" common	"	acres.	5,708,700	100,000	100	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Raymond and Ely, G. S.	Nev.	5,000	3,000,000	30,000	100	540,000	Dec.	1876	1 00	3,075,000	Sept.	1873	3 00	..	..	..	..	..	17½	..	..	..	..	..	..	..	100
St. Joseph, L.	Mo.	2500 acs.	1,000,000	100,000	10	....	.....	....	.....	250,000	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Santiago, G. S.	Nev.	2,000	11,200,000	112,000	100	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Savage, G. S.	Nev.	800	11,200,000	112,000	100	3,418,500	Sept.	1877	1 00	4,460,000	June	1869	3 00	..	10¾	..	..	..	10½	..	10½	..	..	..	11¼	..	500
Seaton, G. S.	Colo.	1,700	500,000	50,000	10	*	.....	....	.....	10,000	May.	1877	0 10	12	..	..	..	..	..	..	..	..	..	..	1.65	1.80	300
Seg. Belcher. G. S	Nev.	160	640,000	6,400	100	244,800	Apr.	1876	5 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Sierra Nevada G. S.	Nev.	3,650	10,000,000	100,000	100	1,800,000	Oct.	1877	0 50	102,500	Jan.	1871	1 00	10	..	..	..	..	..	..	..	..	..	..	..	..	.....
Silver City, G. S.	Nev.	3,900	6,310,000	63,100	100	15,775	Nov.	1876	0 25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Silver Hill, G. S.	Nev.	5,400	5,400,000	54,000	100	972,000	July.	1877	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
South Comstock, G. S.	Nev.	1,500	10,000,000	100,000	100	54,000	Jan.	1877	0 25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
South. California, G. S.	Nev.	1,500	5,000,000	50,000	100	12,500	Feb.	1877	0 25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Southern Star. G. S.	Nev.	1,500	6,000,000	600,000	100	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Trenton, G. S.	Nev.	..	10,000,000	100,000	100	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Union Cons., G. S.	Nev.	850	10,000,000	100,000	100	285,000	Oct.	1877	25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
West Belcher, G. S.	Nev.	1,000	10,000,000	100,000	100	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Yellow Jacket, G. S.	Nev.	1,200	12,000,000	120,000	100	3,198,000	Sept.	1877	2 00	2,184,000	Aug.	1871	2 50	..	..	..	..	..	..	..	13¼	..	..	..	..	..	100
Young America, S.	Nev.	1,000	3,000,000	30,000	100	64,500	Oct.	1877	0 20	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Copper Stocks.																											
Allouez, C.	Mich.	..	1,000,000	20,000	50	940,000	May.	1876	5 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Calumet & Hecla, C.	Mich.	..	2,000,000	80,000	25	1,200,000	.....	....	.....	12,250,000	Oct.	1877	5 00	20	..	..	..	..	..	..	..	..	..	..	..	..	.....
Central, C.	Mich.	..	500,000	20,000	25	100,000	June	1862	0 65	1,160,000	Feb.	1877	7 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Copper Falls, C.	Mich.	..	1,000,000	20,000	50	535,000	May.	1876	.....	100,000	Nov.	1871	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Dana, C.	Mich.	..	500,000	20,000	25	68,000	Jan.	1863	0 50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Dawson, S.	Ont.	..	1,200,000	60,000	20	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Duncan, S.	Ont.	..	1,200,000	60,000	20	75,000	July.	1876	41⅔	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Franklin, C.	Mich.	..	500,000	20,000	25	360,000	June	1876	5 00	585,000	Nov.	1871	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Humboldt, C.	Mich.	..	500,000	20,000	25	100,000	Sept.	1876	0 15	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
International, S.	Ont.	..	1,200,000	60,000	20	....	.....	....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Madison, C.	Mich.	..	500,000	20,000	25	123,000	Sept.	1876	0 10	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Mesnard, C.	Mich.	..	500,000	20,000	25	160,000	Apr.	1876	0 50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Minesota, C.	Mich.	..	1,000,000	20,000	50	436,000	June	1869	1 00	1,820,000	Mar.	1876	0 50	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
National, C.	Mich.	..	500,000	20,000	25	195,000	Oct.	1875	1 00	360,000	Oct.	1873	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Osceola, C.	Mich.	..	1,000,000	40,000	25	880,000	May.	1876	2 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Petherick, C.	Mich.	..	500,000	20,000	25	165,533	Mar.	1876	0 50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Pewabic, C.	Mich.	..	500,000	20,000	25	185,000	June	1868	3 00	460000	July	1873	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Phœnix, C.	Mich.	..	1,000,000	20,000	50	817,500	Sept.	1870	3 00	20,000	Jan.	1876	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Quincy, C.	Mich.	..	200,000	20,000	10	....	.....	....	.....	2,130,000	Feb.	1877	4 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Ridge, C.	Mich.	..	500,000	20,000	25	200,000	.....	....	.....	90,000	Feb.	1875	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Rockland, C.	Mich.	..	500,000	20,000	25	495,000	Jan.	1874	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Star, C.	Mich.	..	500,000	20,000	25	265,000	Mar.	1876	0 50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....
Superior, C.	Mich.	..	500,000	20,000	25	340,000	Mar.	1874	0 25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	.....

G. Gold. S. Silver. L. Lead. C. Copper. * Non-Assessable.

Total Assessments levied to date.....$46,062,530 | Total Sales of coal stocks for the week..... 208,317 shares.
Total Mining Dividends disbursed to date..... 209,791,001 | Total Sales of Mining Shares for the week..... 70,393 do

* A dividend of 3½ per cent. was declared on the preferred stock of this Co. in July, 1877.

is true—that they are sustained by unnatural means; and when the large speculators release their grasp, as they must some day, those who were so unfortunate as to purchase at the prevailing, or higher, prices, must suffer a serious loss. Delaware & Hudson Canal has ranged from 46½ to 48⅝, closing a little weak at 47¼, with sales for the week amounting to 11,282 shares. Delaware, Lackawanna & Western Railroad has been dealt in to the extent of 108,992 shares, at 49⅞@51⅝, closing at 50¼. New Jersey Central has been very quiet, the sales only amounting to 517 shares, at 13¼@14¾, closing at 14¼ asked.

New Central Coal Company.—The annual meeting of this company for the election of officers will be held December 11.

Empire Pipe Line Company.—A special meeting of this company will be held December 16.

Osceola Oil and Pipe Line Company.—The latest quotation of this company's stock is $110.

Columbus and Coal Valley Extension Railroad.—A company by this name has filed articles of incorporation in Ohio to build a narrow gauge road from Columbus east by south to McConnellsville in Morgan County, about 65 miles. The capital stock is fixed at $200,000. The road is to be an extension to the Hocking Valley coal fields of the projected Columbus & Northwestern line.

Richmond Iron Mining Company.—This company has failed to pay the claims against it, and the trustees will apply for its dissolution. The company organized in 1864. The capital stock was $1,000,000. The nominal liabilities are about $137,000.

The Lehigh Valley Iron Company held a special meeting at Coplay, Pa., to-day, to take into consideration the question of making a new loan on the property of the company.

Spring Mountain Coal Company—A semi-annual dividend of 3½ per cent. has been declared on the stock of this company payable December 10.

Coupons on the bonds of the following companies will fall due during the present month:

Chester Railroad Company: coupons paid by Delaware, Lackawanna & Western Railroad.

Chicago, Wilmington & Vermillion Coal Company: Coupons.

Delaware, Lackawanna & Western Railroad Company: con. bonds; coupons.

Green Railroad Company: coupons paid by Delaware Lackawanna & Western Railroad Company.

Morris & Essex Railroad Company: cons. mortgage coupons paid by Delaware, Lackawanna & Western Railroad Company.

Rockland Nickel Mining Company: coupons.

Syracuse, Binghampton & New York Railroad Company: second mortgage; coupons paid by Delaware Lackawanna & Western Railroad Company.

Tennessee Coal and Railroad Company: coupons.

Miscellaneous Sales and Quotations.

Sales and quotations of the stocks and bonds dealt in here at Philadelphia, and Baltimore for the week ending the 30th ult. are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

BONDS.

D. L. & W. 7s, Convt., 1892	J. & D.	—	—	102	—	
" " 2d mtge., 1881	M. & S.	105½	—	105⅜	$1,200	
N. J. C., 1st mtge., new	F. & A.	—	—	112	—	
" " 1st mt., cons. 1899	Q.	67	—	66¾	1,000	
" " Convt	M. & N.	—	—	02	—	
L. & W. B. Coal Co., cons.	Q.	31	—	30	2,000	
Am. Dock & Imp. 7s	J. & J.	—	—	40	—	
D. & H. C. Co., 1st m., 1884	J. & J.	—	—	99¼	—	
" " " " 1891	J. & J.	100⅛	99⅛	99¾	9,000	
" " " " 1877	J. & J.	—	—	—	—	
" " " " reg., 1894	A. & O.	96	—	95½	3,000	
" " " " coup., 1894	A. & O.	—	—	—	—	
St. L. I. M. & S., 1st mt. 1892	F. & A.	103½	103	103	27,000	
Ches. & Ohio, 1st mt., 1899	—	—	—	27	—	
*L. V. RR., con. m. 6s, 1923	J. & D.	95⅝	—	95	1,000	
" " 2d m., 7s, 1910	M. & S.	113¾	—	113⅜	3,000	
" " reg., 1898	J. & D.	—	—	107⅜	—	
" " coup., 1898	J. & D.	—	—	109½	—	
*P. RR., 1st mtge., 1880	J. & J.	—	—	106¼	—	
" Gen. mtge. reg., 1910	A. & O.	103¾	—	106½	3,000	
" Con. m. 6s. cou. 1905	J. & D.	—	—	—	—	
" " " reg. 1905	Q.	—	—	94	—	
" gen. M. Coup., 1910	J. & J.	107	—	106¼	5,000	
" New Loan 5s	—	109	108⅜	—	4,700	
*P. & R. RR., 7s, 1893	A. & O.	—	—	112	—	
" " con. m. 7s. cou. 1911	J. & D.	103	—	102⅝	4,000	
" " Deb. 6s, 1893	J. & J.	—	—	—	—	
" " New convt. 7s. 1893	J. & J.	57	—	57	19,900	
" " Con. mtge. 7s. reg.	J. & D.	99	—	99	8,000	
" " 6s, 44-80 1880	J. & J.	—	—	105	—	
*P. & R. C. & I. Co. Deb. 7s	M. & S.	—	—	—	—	
*P. & R. C. & I. Co	—	—	—	—	—	
*L. C. & N. Co. 6s. 1884	M. & Q.	102½	—	102	1,000	
" " RR. loan 1897	F. & Q.	101¼	—	101	1,000	
" " Con. mtge. 7s.	J. & D.	—	—	—	—	
" " Cvt. gold, 1894	M. & S.	—	—	—	—	
" " Gold Loan, 1897	J. & D.	89¾	89⅛	89½	3,000	
Schuylkill Nav., 6s. 1897	M. & Q.	—	—	—	—	
Pa. and N. Y. Canal, 7s.	J. & D.	—	—	114	—	
Pa. Canal Co	J. & J.	—	—	—	—	
Susquehanna Coal Co. 6s.	—	—	—	—	—	
†Ches. & Ohio 1st m. 6s.	M. & N.	—	—	—	—	
†Balt. & Ohio 6s. 1880	J. & J.	—	—	104	—	
† " " 6s. 1885	A. & O.	108⅛	104¾	104¾	9,000	

Total transactions for the week.....$105,600

STOCKS.

	—QUOTATIONS.— Highest.	Lowest.	Closing.	Sales Shares
American Coal Co.	—	—	35	—
*Cambria Iron Co.	—	—	50	—
*Pennsylvania Salt Manf'g Co.	—	—	64	—
*Westmoreland Coal Co.	—	—	62	—
*Buck Mountain Coal Co.	—	—	25	—
*Schuylkill Nav. Co	—	—	—	—
St. Louis, I. M. & S. RR. Co.	7	6¾	6	600
Spring Mountain Coal Co	—	—	—	—
†Balt. & Ohio RR. Co. pref.	—	—	—	—
" " " common	—	—	101	40
†Pittsburg & Connellsville RR.	—	—	—	—
†George's Creek Coal Co.	—	—	99	—
†Santa Clara Mining Co.	—	—	8¾	—
†Atlantic Coal Co.	—	—	1.40	100

Philadelphia Stocks.

PHILADELPHIA, Friday Evening, Nov. 30, 1877.

Largely under the manipulation of New York operators, it is said, the transactions in this market have been quite liberal considering that the week under review has contained a holiday. Pennsylvania Railroad has, as usual, attracted most attention, the sales having amounted to 53,521 shares at 32½@31½. Philadelphia & Reading Railroad follows next with larger transactions than for many weeks past. The sales in this stock for the week have aggregated 25,227 shares at 16¾@16c. This company will, undoubtedly, publish a very satisfactory report of the fiscal year, closing to-day, and will demonstrate that in this, the most disastrous of years, it has been able to meet all of its fixed charges. Yet this stock is selling at a much less price than the stocks of companies represented in New York, and who will come far from doing this. Lehigh Coal & Navigation has also had a liberal business at from 17⅞@19. Lehigh Valley Railroad has fluctuated between 39¼ and 41. The rumors that a coal combination will be formed receive considerable credit in this city.

Beaver Branch Coal Co.—The annual meeting of this company will take place on the 12th inst.

The following stocks and bonds were sold at auction during the week:

Pennsylvania Salt Manufacturing Co.—394 shares, at $64 per share.

Pennsylvania Railroad Co.—4 shares at $32 per share.

Westmorland Coal Co.—6 shares at $71½ per share.

Clinton Coal & Iron Co.—700 shares at $27 per share.

Chesapeake & Delaware Canal Co.—$4,000 of the 6 per cent. bonds, at 76 per cent.

COUPONS AND INTEREST on the bonds of the following companies will fall due during December:

Colebrookdale Railroad Co.—1st mortgage; coupons paid by Philadelphia & Reading R. R.

Dunbar Iron Co.—Coupons.

Lehigh Coal & Navigation Co.—6 per cent. gold loan; coupons; con. mortgage loans and con. loan 6 per cent.; interest.

Lehigh Valley Railroad Co.—First and cons. mortgage bonds, and 7 per cent. bonds of Pennsylvania & New York Canal and Railroad; coupons.

Pennsylvania & New York Canal and Railroad Co.— 7 per cent. coupons.

Pennsylvania Railroad Co. — Cons. mortgage, coupons, and registered bonds; coupons and interest.

Philadelphia & Reading Railroad Co.—Cons. mortgage loan; registered interest and coupons.

Philadelphia & Readiag Coal and Iron Co.—Coal land; registered interest and coupons paid by Philadelphia & Reading Railroad Co.

Reading & Columbus Railroad Co.—Second mortgage coupons.

South Mountain Iron Railroad Co.—First mortgage coupons.

Swedesboro Railroad Co.—Coupons paid by Pennsylvania Railroad.

United New Jersey Transportation Co.—Loan of 889; coupons paid by Pennsylvania Railroad Co.

Copper Stocks.

Reported by Wilson W. Fay & Co., Room 7, Traveler Building, 31 State Street, Brokers in Mining and Miscellaneous Stocks.

BOSTON, WEDNESDAY EVENING, Nov. 28, 1877.

There has been a very fair amout of business during the past week in the larger stocks, the small ones remaining in their usual state of quietude, and with few exceptions, not changing in market value.

The disposition of the trading stocks has been to strengthen rather than otherwise, and they seem to be returning to the prices from which they have dropped within a few weeks.

Calumet & Hecla has been active, and advanced to 178, but has fallen off to 176 bid and 176½ asked, closing strong at these figures.

Copper Falls remains unchanged at 3@3¼. Franklin is also unchanged, there being no transactions during the week. The Committee on National have reported at last, and the following notice has been issued in consequence from the office of the company:

NATIONAL MINING COMPAY,
BOSTON, November 23, 1877.

An assessment of fifty cents per share has this day been levied on the capital stock of the National Mining Company, on stock of record Nov. 26, payable to the Treasurer, No. 75 State Street, Boston, December 1, 1877, with interest from that date, at rate of 7 per cent. per annum, after which date no stock can be transferred without payment of said assessment, and interest thereon

The stock has therefore dropped to almost nothing, closing .03 bid and .05 asked.

Quincy has strengthened a little and sold at 37½ and closes firm at 37½@38.

On the other Coppers there is no change.

Duncan Silver remains steady at about ¾, having got as low as it will go until after the meeting, when it will, without doubt, jump one way or the other.

International is quiet and uninteresting, and remains unchanged.

Gold and Silver Stocks.

NEW YORK, Friday Evening, Nov. 30, 1877.

The fractional currency stocks have been dealt in on the mining board to the extent of 29,500 shares, leaving but about 30,000 shares for the higher priced stocks. In this amount Moose figures to the extent of 14,750 shares, at 7¼ to 7¾, being quite strong at the close. American has ranged from 4½ to 4⅞, with sales of 5,600 shares. Hukill, it is said, will pay a monthly dividend of 1 per cent. on the 10th inst. Thanksgiving day has had the effect of decreasing the business of the week.

The San Francisco *Post* says of the manipulation of this stock on the Board in that city:

"Since the Ophir ore vein was followed north and south on the 1900 level, heavy holders of Mexican and California stock have had great expectations. Many who are largely interested in the Mexican, are sanguine that the strike is merely the tail end or extension of a rich bonanza, which they believe exists below the 1465 level of their pet mine. On the other hand, all the prominent shareholders in the California claim that it is a continuation or feeder of the vast ore chimney from which they draw their monthly dividends.

MINING STOCK QUOTATIONS IN SAN FRANCISCO.

We give below a table showing the closing price of mining shares in San Francisco yesterday, 28 ult.

Alpha	12	Mexican	15
Belcher	7¼	Northern Belle	14
Best & Belcher	21	Ophir	45¾
Bullion	5¾	Original Comstock	..
Caledonia	4¼	Overman	22½
California	29	Raymond & Ely	7⅛
Chollar Potosi	38¼	Santiago	..
Con. Imperial	1	Savage	10¾
Con. Virginia	23⅛	Seg. Belcher	40
Confidence	5⅛	Sierra Nevada	5½
Crown Point	6¼	Silver City	..
Eureka	36	Silver Hill	3¾
Exchequer	4½	South Comstock	.
Gould & Curry	9½	South California	..
Hale & Norcross	9¾	Southern Star	..
Indian Queen	..	Trenton	..
Julia	2¾	Union Con.	7
Justice	13	West Belcher	..
Kentuck	5½	Yellow Jacket	11¾
Kossuth	..	Young America	..
Leopard	1¾		

The *Gold Hill News* of Nov. 21 says: "The pumps of the Savage and Hale & Norcross have got the best of the water at last, and are apparently able to keep it. The prospects for the complete and steady drainage of both mines are excellent, and work at the lower levels will soon be going ahead as before the flood, with good promise of valuable ore developments The southern end of the Comstock continues looming up, with Alta in the lead as the key note. The Alta is showing a splendid body of ore, the extent of which is not ascertained as yet. The owners of each of the neighboring mines—the Justice, Woodville, Lady Washington, New York, and Succor—all hope to demonstrate that they are upon the same ledge and will strike it fully as rich as the Alta has done. The nice little quartz vein found in the east drift of the Yellow Jacket 2,200-level has been passed through, and the face of the drift is now in porphyry again. The north drift, however, continues in promising quartz. Trojan is turning out 50 tons of ore per day, worth from $30 to $40 per ton. Heavy shipments from the Bonanza mines are being made toward paying the next dividend, and the 20-stamp addition to the California mill lending material assistance in the way of increased ore production. Altogether the outlook all along the line continues to be decidedly cheerful and full of promise."

Ophir Gold & Silver Mining Co.—The *Gold Hill News* of November 23 says: "The face of the east drift on the 1,900 level is 35 feet east of the ore vein recently encountered, and is still in porphyry, carrying occasional streaks of quartz and clay. This drift has been stopped in order to lay track and put in a switch at the junction of the drift with the new ore discovery, preparatory to driving prospective drifts both north and south on the ore, to determine not only its width, but also its character and tendency. So far as the vein has yet been penetrated, it is of the most favorable character, and the best experts on the lode are more confirmed than ever in the belief that it will lead, either north or south, to a large and valuable ore deposit. The main south drift on the same level, which has been suspended for some time, was started up again day before yesterday, and is now being pushed energetically ahead. Cutting out for the incline pump bob at the 1,900 station is going rapidly ahead. Sinking the joint Ophir and Mexican winze on the north line is making about 2½ feet per day.

It is believed that the stock of the Ophir Mining Co. is Manipulated on the Board by the Bonanza Firm of Flood & O'Brien, and that the recently discovered ore body was known to them months ago through the use of the diamond drill in prospecting the California near the Ophir line. The quotations of this stock have been very irregular during the week opening in San Francisco to-day at $52, an advance of $16 per share from the quotation of a week ago.

Sutro Tunnel.—The total length of this work on the 21st of November was 18,298 feet. The face of the header continues in easy working ledge matter, and constant and secure timbering is required.

The Comstock committee of mine owners and managers in Sau Francisco have not made their final report in the Sutro Tunnel matter, but will do so before long. The prospects are that no compromise will be arrived at, but that the companies will combine to create some cheaper and more advantageous outlet for water drainage than the Sutro Tunnel.

Ontario Silver Mining Co.—This stock has been dealt in to the extent of 2,176 shares, and closes at 25¼. The bullion product of this company, from Nov. 1 to the 22d, inclusive, was $121,769.38, assay value.

Eureka Consolidated Silver Mining Co.—This stock is lower, the sales for the week have amounted to 200 shares. The net receipts of this company for October was $216,253. At the time of the declaration of the November dividend there was $299,945 in the treasury. If the production up to November 20th was in the srme ratio as in October to that date, on the day the dividend was payable, the 20th, there would have been resources to the amount of $383,645 to pay a dividend of $150,000 with, leaving a balance of $233,645.

This stock continues to decline, the opening quotation in San Francisco was $30½ against $40 per share, as quoted in our last.

Mariposa Land & Mining Co.—The advance in this stock has been the feature of the week on the New York market, the dealings in the common stock amounting to 6,750 shares, at from 2⅝ to 3¾, closing at the latter price; and the sales in the preferred reaching nearly 4,000 shares, at from 2⅞ to $5 per share, closing at $4 bid. It is rumored, as an explanation of the extraordinary movement in this stock, that the injunction recently granted against Eugene Kelly and others may be made permanent. It is also thought that there is a pool in the stock.

INCORPORATIONS.

We note the recent organization of the following companies, in addition to the announcements in our issue of November 3.

Name of Company.	Location.	Capital Stock.
Bodie Tunnel and Mining Co.	California.	$10,000,000
Belvedere Mining Co.	"	6,000,000
McClinton "	"	6,000,000
Ventura Con. Petroleum Co.	"	5,000,000
Melrose Metallurgical Works.	"	2,500,000
Mayflower Gravel Mining Co.	"	1,000,000
Butte Creek Hydraulic "	"	480,000
Ocean Vein Oil Co.	"	256,000
Camulus "	"	250,000
Butte Quartz Mining Co.	"	200,000
Sulphur Mountain Oil Co.	"	500,000
Pacific Oil Works	"	10,000
Mountain City Mining Co.	"	10,000,000
Summit Gold Mining Co.	"	5,000000
Royal Mill and Mining Co.	Nevada	10,000,000
Pocohontas "	"	10,000,000
Elko Mining Co.	"	10,000,000
West Gate Mining Co.	"	6,000,000
Yankee Blade Mill and M. Co.	"	10,000,000
Silver Monarch Mining Co.	"	10,000,000
Rock Creek Mining Co.	"	10,000,000
Echo G. and S. Mining Co.	"	10,000,000
Eagle Mill and Mining Co.	"	10,000,000
West Gate Mining Co.	"	6,000,000
Low Range Ledge S. M. Co.	"	2,500,000
Oro Blanco Mining Co.	Arizona	10,000,000
Mayflower Silver Mining Co.	"	10,000,000
Almoner G. and S. "	"	10,000,000
Arizona Mexican Mining Co.	"	10,000,000
Marshall Coal Mining Co.	Colorado	30,000
Home Stake Mining Co.	Dakota	10,000,000
Gertrude's G. and S. Mining Co.	Mexico	10,000,000
Esmeralda Mill & Mining Co., Calf. & Nev.		10,000,000

The Mexican Mining and Real Estate Co. of Sinaloa, Mexico, has increased its capital stock from $5,000,000 to $7,500,000.

The Sumner Gold & Silver Mining Co. of Kern County, Calf., has increased its capital stock from $600,000 to $1,200,000.

Gas Stocks.

NEW YORK, FRIDAY EVENING, Nov. 30, 1877.

The market for gas stocks continues very dull. We lower a few of the quotations, and advance that of the Municipal $10 per share. We note transactions of ten shares of the stock of the New York Gas Co. on the Board, at $124 per share.

COUPONS on the bonds of the following fall due during December:

Citizens' Gas Light Co., Newark, N. J.—Coupons.

Metropolitan Gas Light Co.—Coupons.

Peoples' Gas Light and Coke Co. of Chicago.—Coupons.

Bids for Lighting the City of Hamilton, Ohio.—On the 26th inst. the two companies supplying gas to the citizens of Hamilton, Ohio, submitted the following proposals for furnishing gas for a period of ten years from the 3d of June, 1878:

The Citizens Gas Company offer to furnish gas and light and extinguish the city lamps at $28.20 per post per year.

To furnish gas to all buildings used by the city at $2.25 per thousand feet.

To furnish to all private consumers of the city gas at $2.25 per thousand feet.

The Hamilton Gas Light & Coke Company (the new company now furnishing gas) made the following bids:

For making all connections to all lamp-posts, etc., and lighting and extinguishing at $25.80 per post per year.

For all gas furnished to all buildings used by the city at $2 per thousand feet.

For private consumption, at per thousand feet (when the monthly consumption exceeds 5,000 cubic feet), $2.50; and when the consumption is less than 5,000 cubic feet $3.50.

The second bid of the Hamilton Gas Light & Coke Company was as follows:

To furnish gas and lamps and extinguish the same at $31 per post per year.

To furnish gas to all buildings used by the city at $2.50 per thousand feet.

For furnishing private consumers of the city, when the monthly consumption exceeds 5,000 cubic feet, $2.50, and when the monthly consumption is less than 5,000 cubic feet, $3 per thousand.

Lighting Lamps by Electricity.—The city of Providence, R. I., after two years' experience, reports favorably on the lighting of their lamps by electricity. In a certain district, over nine miles in length, 220 lamps are lighted or extinguished in less than fifteen seconds. When the device is applied to the 2,500 lamps of the city, the net saving for gas and labor per year is estimated at $25,000. The company claim that the use of their invention in the city of Boston would save $150,000 per annum.

The following list of Companies in New York and vicinity are corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas stocks, No. 30 Broad street, N. Y.

Companies in New York and vicinity.	Capital Stock.	Par.	Dividends. Rate per an.	Dividends. Am. of last.	Dividends. Date of last.	Quotat'ns Bid.	Quotat'ns As'd
	$						
Mutual, N. Y.	5,000,000	$100	10%	2½	Oct. '77	92	95
" Gold Bonds	90,000	1,000	7%	3½	Feb. '77	100	103
N. York "	4,000,000	....	10%	5	Nov '77	123	125
Metrop. "	2,500,000	100	10%	5	June '77	131	133½
" " Certf.	1,000,000	....	7%	3½	" "	100	103
" " Bonds	500,000	1,000	7%	3½	" "	102	—
Harlem "	1,850,000	50	8%	3½	Aug. '77	95	100
Manhat. "	4,000,000	50	...‡	5	Nov '77	210	215
Brooklyn, B'klyn.	2,000,000	52	15%	5	July '77	165	175
Nassau, "	1,000,000	25	...‡	4	July '77	76	80
" " Certf.	700,000	1,000	7%	3½	July '77	98	101
People's, "	1,000,000	10	...‡	3½	July '76	30	45
" " Certf.	300,000	1,000	7%	3½	July '77	80	85
" " B'ds	325,000	....	7%	3	Feb. '77	96	100
Metrop. "	1,000,000	10	5%	2½	Nov '77	65	70
Wmsb'rg "	1,000,000	50	10%	2½	July '77	117	123
" " Certf.	1,000,000	....	7%	3½	July '77	100	102
Citizen's "	1,200,000	20	...‡	4	Jan. '77	79	85
" " Certf.	320,000	1,000	7%	3½	Oct. '77	97	100
J. C., N. J.	750,000	20	10%	5	July '77	160	—
Cent. Westch. N.Y	466,000	50	7%	4	July '77	80	90
Subur'n "	295,000	50	7%	3½	Oct. '77	—	95
Municipal, N.Y.	1,500,000	100	.....	.....	.....	85	100

‡ Paid irregularly.

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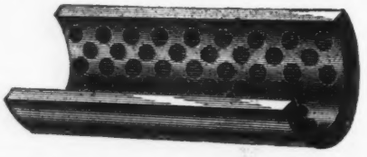

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